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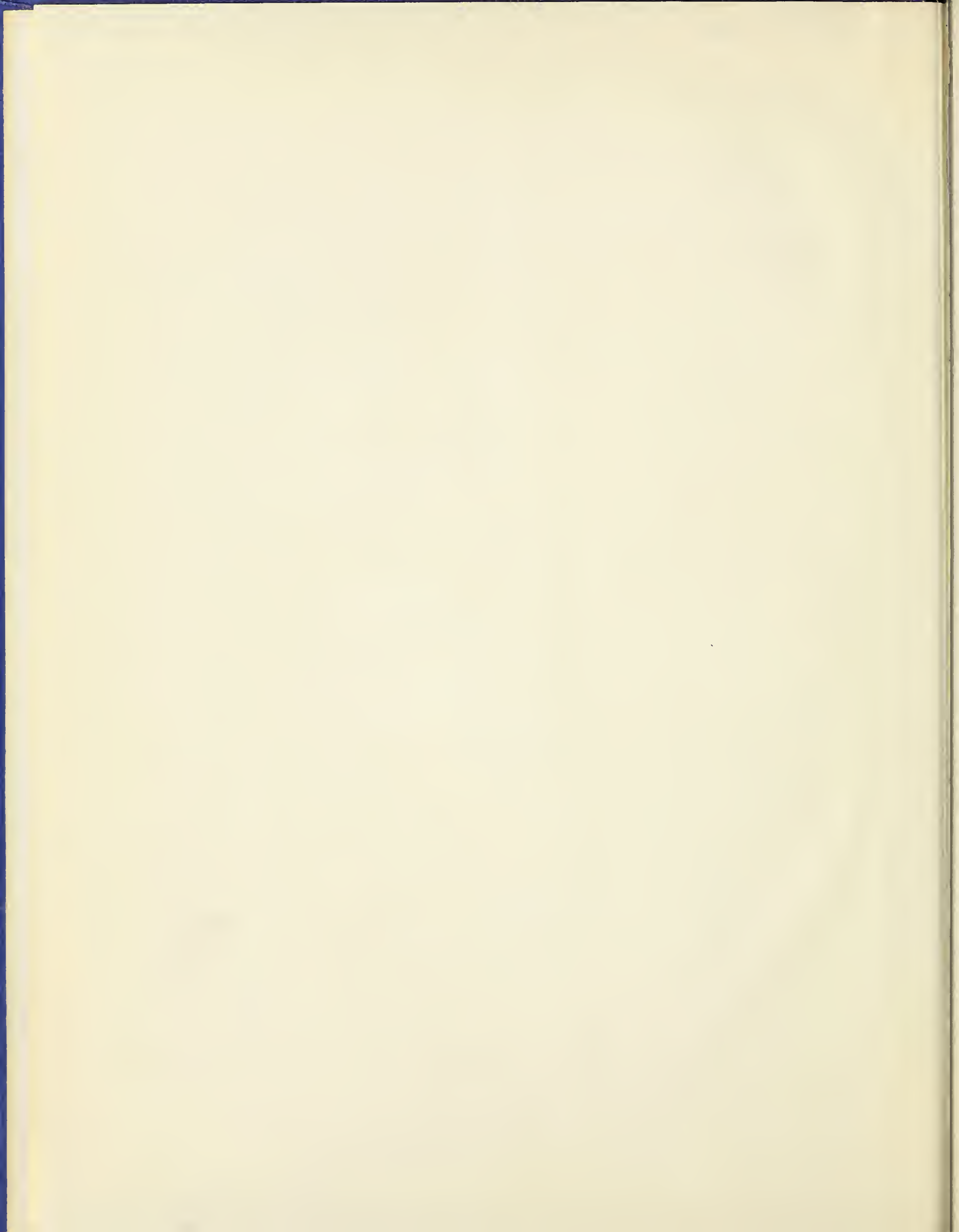
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Thesis
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A STUDY OF THE IMPACT OF DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS
ON SCHOOL ATTENDANCE RATES IN THE PROVINCE
OF QUEBEC FROM 1901 TO 1951

A Thesis
Presented to
the Faculty of Graduate Studies
Division of Educational Administration
The University of Alberta

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Jean-Yves Drolet
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J.Y.D.

ABSTRACT

School attendance rates vary from area to area in the same province and also from time to time in the same area. This thesis is concerned with the factors which cause variation in the school attendance rates. Attention has been centered on the following demographic factors: the age-structure of the school-age population; the relative size of the employable population; and the relative size of the total population. All other factors influencing school attendance have been designated as socio-economic factors. These would include such influences as degree of urbanization, occupational structure, economic conditions and so on.

The sex variable has not been studied as a demographic factor. Instead the study of the influence of the demographic and socio-economic factors on school attendance in general has been supplemented by an analysis by sex.

The following conclusions have been drawn from the findings of the study:

1. School attendance rates for the total school-age population (5-24 years of age) are heavily affected by variations in the age-structure of the school-age population.
2. The influence of the socio-economic factors is tending to become more uniform throughout the province.

3. School attendance rates for males are more seriously affected by socio-economic factors than are school attendance rates for females.

4. There is a negative relationship between the influence of the age-structure factor and the influence of the socio-economic factors on school attendance. This indicates that where the age-structure of the school-age population would produce higher attendance rates, the socio-economic factors tend to produce lower attendance rates.

5. There is a relationship between the relative size of the employable population and the influence of socio-economic factors. A larger relative employable population tends to increase school attendance rates.

6. A similar relationship exists between the relative size of the total population and the influence of socio-economic factors on school attendance rates.

7. The attendance rates for males are more affected than are the rates for females by such demographic factors as the relative size of the employable population and the relative size of the total population.

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CHAPTER I

THE PROBLEM DEFINED AND DELIMITED

An administrator in education cannot but be concerned, at one time or another, with the local conditions which have a favorable or unfavorable impact on schooling. The resulting influence of these local conditions is reflected, for one thing, by the proportion of the children of school-age who are actually attending school or, in more technical terms, by the school attendance rate. A brief look at this rate, for individual counties in the Province of Quebec, is sufficient to make one realize that there exist rather large discrepancies. What causes these discrepancies is a question that needs to be answered in order for the administrator to see what he could do about it or, if the causes are outside his control, to gain at least a better understanding of the phenomenon and be in a position to offer a more enlightened interpretation of the situation.

I. THE PROBLEM

Because of the social character of school attendance, any problem in relation with it could not be thoroughly studied without appealing to sociological knowledge. Moreover, since there is a population involved, it seems that the demographic point of view should be the first to look for.

Demography is concerned with the number and the characteristics of the people forming the population of a given area. The two fundamental characteristics this field of study is basically interested in are age and sex, both being generally studied simultaneously. Demographers refer to the age or sex variable within a population as the age or sex composition or structure of this population. The ratio of girls to boys being almost constant, insofar as children are concerned, the age composition seemed to be the variable which could more likely offer some explanation to the discrepancies in the overall attendance rates among counties.

Statement of the problem. In question form the problem was: What has been the influence of the age-structure of the population on school attendance rates in the Province of Quebec during the first half of the twentieth century?

Specific problem areas. The age-structure of a population has many dimensions, and each one could have had some relationship with school attendance. For the purpose of this study, however, only three of them have been selected, each one becoming the object of a sub-problem which, expressed in question form would be:

1. What has been the relationship between the overall school attendance rates and the age-structure of the school-age population?

2. What has been the relationship between the school attendance rates and the ratios of school population to employable population?

3. What has been the relationship between the school attendance rates and the ratios of school population to total population?

It is certain that these demographic factors have not been the only ones having an impact upon school attendance. Quite a number of other factors could be suspected of affecting school attendance in one way or another. Among them could be mentioned: the degree of urbanization; the occupational structure; the family characteristics; the educational system and so on. All of these factors have been considered as a group of factors and no attempt has been made to isolate the influence of any particular one. For the sake of simplification, they have been referred to as socio-economic factors. The influence of demographic factors has been studied in relation to the influence of socio-economic factors in order to show their relative importance and also because of the possibility of interrelationship between the two influences.

A very important thing to realize is that the measure of the influence of any of these factors is not absolute but relative. The requirements for an absolute measure of that

kind would be that both the minimum and the maximum influences are known, conditions which cannot be met with the variables involved. For example, a population is unthinkable without an age-structure. This kind of measure must then be thought of as relative, in terms of deviation from a given situation. Even then, the reference point must be selected arbitrarily since an ideal situation cannot be determined without referring to a value system. In the present research, the point of reference or the basis for comparison has been the status of the Province of Quebec as a whole in 1951.

Sex which is a demographic variable has not been studied as such since no effort has been made to evaluate the influence of differences in the sex composition of a population on school attendance rates. However, suspecting that the influence of the already mentioned factors could have been different on school attendance rates of males and of females, the study of the influence of these factors on the school attendance rates for the total school-age population has been supplemented by an analysis by sex.

II. DELIMITATION OF THE STUDY

The only area under study has been the Province of Quebec and no attempt has been made to establish a comparison with other provinces.

The principal source of information has been the federal census, as published since 1931. It has been impossible to secure the necessary information for 1911 and 1921, but fortunately Laval University of Quebec had the data for 1901 which had been directly collected at the Federal Bureau of Statistics in Ottawa. No other source has been used because no other could provide adequate information for the whole fifty-year period.

The only dimensions of the age-structure which have been considered are the age-structure of the school-age population, the ratio of school population to employable population and the ratio of school population to total population.

In order to evaluate the influence of the age-structure of a population on school attendance, it is necessary to have a number of different populations with different age-structures or to have one population, the age-structure of which has changed from time to time. The two possibilities have been combined in the present study; that is, the Province of Quebec has been divided into sixty-six counties corresponding to the federal census counties (different populations) and data have been collected as already mentioned for 1901, 1931, 1941 and 1951 (evolution in time).

It must be understood that the purpose of the study in time is not to explain the age-structure at one time by the age-structure ten or twenty years before. Rather, this study, through an analysis of the population of the counties of the Province of Quebec at specific time intervals, seeks to discover trends, if any, in the relative influence of the factor of age-structure on school attendance.

III. LIMITATIONS

The school attendance rate is used in the present study as a measure of one standard of education, that is, retention in school, and in that sense it could be considered as a retention rate. Such a rate, however, is generally used with reference to a particular age or a specific point of the whole span of school life. There could be, for instance, a retention rate expressing the proportion of the students who remain in school after grade six or grade nine or after they are no longer governed by the school attendance law, and so on. In the present study, because of the impossibility of obtaining economically the necessary information for computing attendance or retention rates for different segments of the school-age population, a global rate computed from the total school population and the total school-age population has been used. It must be realized

that the use of such a global rate has limited to a certain extent the possibilities of the research. It would have been interesting and useful to evaluate the influence of the age-structure of a population in attendance at the university or any other level but this cannot be achieved without knowing specific attendance rates.

The lack of information for 1911 and 1921 is very unfortunate because it creates a serious gap in the study in time. The assumption had to be made that the change that occurred between 1901 and 1931 was constant and continuous during this thirty-year period.

IV. DEFINITION OF TERMS

Since some terms have been used in a particular sense and others are rather technical, it has been felt necessary to include the following section.

School-age population: The segment of the total population from five to twenty-four years of age (inclusive) at the time of the federal census.

Employable population: The number of people from twenty to sixty-four years of age (inclusive) no matter if employed or not. The "employable population" has been preferred to the "employed population" because the latter is

not a true dimension of the age-structure of the population. It could be objected that "employable population" so defined, includes a number of people who are not in fact employable because of a physical or mental handicap or for some other reason. Assuming that the proportion of this segment of the population which is not in fact employable is relatively small and fairly constant from one county to another and considering that a correction which would account for these exceptions would be more complicated than useful, no modification in that sense has been made and the term "employable population" has been used in spite of its lack of precision.

There is overlapping between school-age population (5 to 24 years of age) and employable population (20 to 64 years of age), so that those between 20 and 24 years of age are included in both the school-age population and the employable population. This overlap, however, which may at first appear serious does not have important consequences because school-age population and employable population are not compared directly in the present study; the comparison is made between rates and ratios, and the proportion of the population between 20 and 24 years of age actually attending school is so small that the effect of the overlapping is negligible.

Age-structure of the school-age population: The number

(or proportion) of children in each group of ages included within the limits of the school-age population. In the present case, this is the number of children from 5 to 9, 10 to 14, 15 to 19, 20 to 24 years of age. Such numbers (or proportions) for the province as a whole in 1951 have been referred to as the standard age-structure.

Attendance rate: The proportion of a given population attending school.

(a) Standard attendance rate: An attendance rate computed for the province as a whole in 1951. This rate is called global if it refers to the proportion of the total school-age population (5-24) (for one sex or both) actually attending school; it is called specific if it refers to the proportion of one segment (5-9, 10-14, etc.) of the school-age population attending school.

(b) Standardized attendance rate: The global rate which could have been expected for a particular county, at a given time, had the standard specific rates been applied to its actual age-structure.

Demographic factor: It is the age-structure of the school-age population that has been referred to in this study as the demographic factor. It is understood however that the demographic factor should have been the size of the

school-age population. The school-age population including all people between five and twenty-four years of age and observation showing that these people do not attend school in the same proportion according to their age, there was evidence that the size of the school-age population as such could hardly present a factor whose influence on school attendance rate could be measured with profit. An alternative was to work with the population of groups of ages within the school-age population but data were not available for the whole period under study. It has then be decided that the age-structure of the school-age population would be the demographic factor in the present context knowing full well that it is not a demographic factor in the true sense of the word. This being said the portion of the variation in the school attendance rates which will be attributed to the influence of the demographic factor will be the portion of this variation artificially caused by variation in the age-structure of school-age populations. In other words, differences in attendance rates attributed to differences in age-structure are not real differences in attendance but rather artificial differences in rates caused by specific age-structures.

Socio-economic factors: This term of socio-economic factors includes all factors other than the age-structure of

the school-age population. The real demographic factor, that is, the size of the school-age population is then considered here as a socio-economic factor. The term being rather vague it has been felt that no harm was done. Bearing this in mind it appears then that the differences in attendance rates attributed to variation in the socio-economic factors will be, in fact, real differences in attendance. Variation in the age-structure of the school-age population produces differences in attendance rates but not in attendance as such but variation in the socio-economic factors results in variation in attendance rates which represents real variation in attendance.

V. OUTLINE OF PROCEDURE FOLLOWED

There were sixty-seven federal census counties in 1931. In 1941 seven of these counties have been subdivided to correspond with municipal counties. For instance the county of Charlevoix has been subdivided into Charlevoix-East and Charlevoix-West, the county of Gaspé into Gaspé-West and Madeleine Islands and so forth, so that since that time there have been seventy-five census divisions in the Province of Quebec. For the purpose of this study these subdivisions have been combined in order to render the data of 1941 and 1951 comparable with those of 1931. Furthermore,

the counties of Montreal Island and Jesus Island have also been fused because of their identical geographic conditions, their proximity and the relatively small population of Jesus Island. Thus, the number of subdivisions has been reduced to sixty-six.

In 1901 the federal census was based upon electoral districts which were not coterminus with the census counties of 1931. In order to make the data of 1901 comparable with those of the other censuses, the county structure of 1931 has been superimposed on the district structure of 1901. The populations of the districts have been divided on a proportional basis, assuming that the rate of growth had been the same in all parts of these districts.

The study, as previously mentioned, is concerned with the influence of demographic factors on school attendance in the Province of Quebec. Before attacking this problem, it was felt necessary to make a description of the evolution of school attendance in the different counties, as well as in the province as a whole since 1901, in order to become better acquainted with the phenomenon under study.

Chapter II provides such a description. It begins with a comparison of the attendance rates for the province as a whole to see if there has been any general trend during the period under study. This short section is followed by an

analysis of the distributions of the attendance rates of the counties for each census, bearing in mind the possibility of discovering changes which have not been shown by the evolution of the rates for the province as a whole. Finally, the counties are considered individually to identify those which have been consistently ranked high or low with regard to their school attendance rates and also those which have been particularly stable or unstable in the same respect. Because it was felt that the rates for males and for females might differ, the analysis of the total school population is supplemented by a similar analysis for each sex. This procedure is also followed in chapter III, IV and V.

Chapter III studies the problem of the relative influence of the age-structure of the school-age population on the school attendance rates. Using the attendance rates for the province as a whole in 1951 as standard rates, a standardized rate has been computed for each county and for each census. The comparison of the observed rates, the standardized rates and the standard rate leads to the relative influence of the age-structure of the school-age population and correspondingly the relative influence of all the other factors which, for the purpose of this study, will be referred to as socio-economic factors.

Chapter IV deals with the relationship between the

school attendance rates and the relative size of the employable population. The intention is to find out the degree to which variation caused by socio-economic factors are associated with variation of this factor.

Chapter V examines the relationship between the school attendance rates and the relative size of the total population.

Chapter VI provides a summary of the findings, presents conclusions and suggests areas for further research.

CHAPTER II

SCHOOL ATTENDANCE RATES AS OBSERVED

Before attempting to investigate the influence of factors on school attendance rates, it has been felt that a study of these rates in their variations from one place to another and from one time to another would help in obtaining a better understanding of the phenomenon the present research intends to investigate.

The chapter starts with consideration of the school attendance rates for the province as a whole during the period under study, then analyses the evolution of the distribution of the attendance rates of the counties, and ends with a breakdown of this distribution of rates, showing the pattern of evolution of individual counties.

As there is the possibility of a difference between the evolution of the observed rates for males and females, the analysis of school attendance rates for the school population as a whole is followed by an analysis by sex.

I. THE EVOLUTION OF THE PROVINCIAL SCHOOL ATTENDANCE RATE AS OBSERVED

Looking at the school attendance rate for the province as a whole it is surprising to see that this rate which was 39.0% in 1901 became 47.7% in 1921 but remained almost constant for the following thirty years, it was

47.5% in 1931 and 1941 and 47.8% in 1951.

This observation suggests two different interpretations: this rate is a kind of optimum which can hardly be surpassed; or the kind of change which took place did not affect the provincial rate. To clarify this point, a more analytical study seems imperative.

Knowing the observed school attendance rate for each federal census county of the Province of Quebec in 1901, 1931, 1941 and 1951, the next step will be to analyse the distributions of rates to see if some traces of a change can be observed.

II. THE DISTRIBUTIONS OF OBSERVED RATES: THEIR CHARACTERISTICS

For each census, for which the necessary information was available, Table I indicates the number of counties having given rates and also the cumulative number of counties having a given rate or a lower one.

The first observation from this table is that the range of the distributions decreased from 1901 to 1941 and then remained about the same for 1951. It is of interest to note that one of the counties (always the same) contributed by itself to maintain this range fairly large. The difference between its attendance rate and the rates of the other counties has decreased, however, from one census to another.

In 1901, there was no county which had a rate of 50.0% or higher, 72.7% (48 counties) were below this rate in 1931, 87.9% (58 counties) in 1941, and 54.5% (36 counties) in 1951.

As there are reasons to believe that the situation in 1941 was somewhat abnormal, because of the combined effects of the depression and the second world war, the distribution of rates for this year could be discarded for a moment and then a rather constant improvement would be observed. Considering in this case that the fifty year period under study is divided into two parts, one from 1901 to 1931 that is to say thirty years, and the other from 1931 to 1951 a twenty year period, the percentages mentioned earlier for 1901, 1931 and 1951 could be corrected to allow for the difference in the length of the two periods. In so doing, it is found that the difference between 1901 and 1931, this period being artificially reduced to twenty years is 18.7% and the difference between 1931 and 1951, 17.5%.

At this stage it is important to realize that a school attendance rate for the province as a whole computed from Table I would not be the same as the one mentioned at the beginning of this chapter. The reason for this is that the populations of the counties are different in size. These differences in the size of the population of the counties which affect a rate computed from the school population and

TABLE I

SCHOOL ATTENDANCE RATES FOR BOTH SEXES FOR THE CENSUS
COUNTIES OF THE PROVINCE OF QUEBEC, AS OBSERVED
IN 1901, 1931, 1941 AND 1951

Rates %	1901		1931		1941		1951	
	a 1	b 2	3	4	5	6	7	8
28	2	2						
29		2						
30		2						
31	4	6						
32	1	7						
33	2	9	1	1				
34	1	10		1				
35	1	11		1				
36	2	13		1				
37	6	19		1	1	1		
38	5	24		1		1		
39	7	31		1		1	1	1
40	5	36		1		1		1
41	7	43		1		1		1
42	2	45		1	1	2		1
43	6	51	3	4	2	4	1	2
44	4	55	6	10	5	9	1	3
45	5	60	4	14	11	20	4	7
46	2	62	9	23	17	37	1	8
47	2	64	12	35	7	44	10	18
48	1	65	8	43	10	54	8	26
49	1	66	5	48	4	58	10	36
50			8	56	3	61	11	47
51			5	61	2	63	6	53
52			4	65	2	65	5	58
53			1	66	1	66	5	63
54							1	64
55							2	66

a: Columns 1, 3, 5 and 7 indicate the number of counties having the same rate.

b: Columns 2, 4, 6 and 8 indicate the number of counties having a given rate or a lower one.

the school-age population of the province as a whole, have absolutely no effect when, as it is done in Table I, each county is counted for one, regardless of its population.

Using statistical procedures, more precise information about the distributions of observed attendance rates and their evolution can be obtained. In view of the fact that one county has always been behind the others insofar as its school attendance rate is concerned, it has been necessary to choose measures which are not affected by the extremes. For this reason, the median has been used instead of the mean and the quartile deviation instead of the standard deviation. The degree of skewness and kurtosis has been determined using the four moments method. Table II, presents this statistical analysis of the distributions of observed rates.

As it can be seen in this table, the median has increased substantially between 1901 and 1931. It decreased slightly between 1931 and 1941 to increase again between 1941 and 1951. Because of the prevailing abnormal conditions of the decade 1931 to 1941, this period could be discarded for a moment and a trend toward a higher median would be observed. This trend appears to have slowed down after 1931 since the median in 1951 was only 1.70 higher than that of 1931, compared to the increase of 7.50 between 1901 and 1931.

TABLE II

MEASURES OF CENTRAL TENDENCY, DISPERSION, SKEWNESS AND
 KURTOSIS FOR THE DISTRIBUTIONS OF OBSERVED
 ATTENDANCE RATES FOR BOTH SEXES
 FOR THE CENSUS COUNTIES OF THE
 PROVINCE OF QUEBEC IN 1901,
 1931, 1941 AND 1951

Measures	1901	1931	1941	1951
Median	40.00	47.50	46.30	49.20
Q	3.30	2.00	1.30	1.80
Skewness	-0.427	-1.360	-0.145	+0.874
Kurtosis	-0.415	+4.065	+1.678	+0.528

It must be considered however that the decade 1941-1951 had to make up for the decrease during the decade 1931-1941. Assuming a constant and gradual increase in the median, from 1901 to 1931, which would mean an increase of 2.50 per decade, the trend toward a higher median has even accelerated after 1941 since the median in 1951 was 2.90 higher than that of 1941.

A look at the evolution of the quartile deviation shows that the general trend is toward less dispersion or, in other words, toward greater uniformity in the attendance rates of the counties. It is interesting to note that the lower median observed previously for 1941 is accompanied by a smaller quartile deviation. This suggests that the counties whose school attendance rate was relatively high in 1931, reduced their rate more than did those whose attendance rate was relatively low.

The measure of skewness reveals an interesting trend. The skewness which was $-.427$ in 1901 became -1.360 in 1931 indicating a trend toward greater negative skewness. In 1941 it was $-.145$ and $+.874$ in 1951. The trend since 1931 has then been from a negatively skewed to a positively skewed distribution. This means that between 1901 and 1931 there was a mass of counties having a relatively high school attendance rate (for the time) and fewer counties having

a low rate. In 1951, the situation was the opposite with a larger number of counties having a somewhat similar rate and a few leading counties.

Insofar as kurtosis is concerned, the distribution of observed attendance rates was platykurtic in 1901 but became leptokurtic in 1931. After 1931, the trend has been toward normality which means a trend toward a smaller concentration of cases around the median.

The study of the distributions of observed attendance rates and their changing characteristics has provided some useful informations about general trends but has not indicated anything about the relative order of the counties and changes in this order. One way of obtaining this sort of information is to compute coefficients of correlation.

III. CORRELATION BETWEEN THE DISTRIBUTIONS OF OBSERVED ATTENDANCE RATES FOR THE CENSUS COUNTIES OF THE PROVINCE OF QUEBEC IN 1901, 1931, 1941 AND 1951

As can be seen from the coefficients of correlation presented in Table III, the relative position of the counties seems to have been in constant change, without any indication of a trend toward stability. Moreover the correlation between 1901 and the other years shows clearly that at no time did the relative order come back to what it was formerly.

The comparison of the coefficient of correlation

TABLE III

COEFFICIENTS OF CORRELATION BETWEEN THE DISTRIBUTIONS OF
OBSERVED RATES FOR BOTH SEXES FOR THE CENSUS
COUNTIES OF THE PROVINCE OF QUEBEC IN
1901, 1931, 1941 AND 1951

	1931	1941	1951
1901	.42	.28	.10
1931		.67	.40
1941			.48

between 1901 and 1931 and the coefficient of correlation between 1931 and 1951, taking into consideration the difference in length of these two periods, indicate that the changes in the relative position of the counties have accelerated after 1931. Considering the second period, that is from 1931 to 1951, the relatively high correlation between 1931 and 1941 suggests that the greatest instability occurred after 1941. In brief, it could be said that at no time during the whole fifty year period has the relative order of the counties with regard to attendance rates been as variable as between 1941 and 1951.

Very little of the relative position of the counties in 1901 remained in 1951, the coefficient of correlation between these two years being as small as .10.

Knowing that the relative position of the counties has been variable during the period under study, the next step will be to rank the counties according to their average rate for the whole period and identify those which have maintained a high average and those which have maintained a low average.

IV. THE AVERAGE RATES

For each county a mean or average attendance rate has been computed for the whole fifty year period. This provided

a distribution of average rates, the mean and the standard deviation of which have been found. Then it has been arbitrarily determined that all the counties having an average rate above one standard deviation from the mean would be considered as having maintained a high average rate and correspondingly those having an average rate more than one standard deviation below the mean, a low average.

Following this procedure, the following counties have been identified:

<u>High average rate</u>	<u>Low average rate</u>
Champlain (no. 12)	Abitibi (no. 1)
Compton (17)	Beauharnois (6)
Deux Montagnes (18)	Gaspe, Iles de la Madeleine (22-23-24)
Joliette (29)	Hull, Gatineau (25-26)
Kamouraska (30)	Labelle (31)
Levis (36)	Montmagny (45)
Nicolet (51)	Papineau (52)
Saint Maurice (67)	Pontiac (53)
Yamaska (75)	Saguenay (60)
	Temiscamingue (68)

Most of the counties whose average rate has been low, are only partially developed and their condition at the beginning of the century contributed to their low average

rate, (see Appendix I). The principal occupations in these counties are in mining, fishing, and lumbering and a very small proportion of the workers need to have a high degree of education.

From this point it is possible to go a little farther in the analysis of the observed rates of the counties and find out those counties which have been particularly stable in their rates or particularly unstable.

V. STABILITY OF THE COUNTY RATES

In evaluating the stability or instability of the county attendance rates, it has been thought that variation, from one decade to another, caused by a kind of general trend toward higher rates had to be eliminated. According to this point of view, a stable county's rate would be a rate which has been maintained at the same place in the distribution of counties' rates, in terms of deviation (standard) from the mean rate. It is the variation in the deviation from the mean rate, from one census to another, that has been considered as a measure of stability. This variation in turn has been measured according to the following procedure: knowing for each county the deviation of its rate from the mean rate and this for each census, an average deviation could be found for the total period; then

for each census, the difference could be found between its actual deviation from the mean at that time and its average deviation for the whole fifty year period; finally the sum of these differences provides the measure of stability (or stability score). The lower the stability score, the more stable has been the rate.

In order to identify those counties whose attendance rates have been particularly stable and those whose rates have been particularly unstable, the mean and the standard deviation of the distribution of stability scores for all the counties have been computed and those counties whose stability scores were below one standard deviation from the mean have been considered as particularly stable and, inversely, those whose stability scores were more than one standard deviation above the mean have been considered as particularly unstable. Using this method, the following counties have been identified:

Particularly stable

Beauce (no.5)

Chateauguay (15)

Joliette (29)

Levis (36)

Nicolet (51)

Quebec (55)

Particularly unstable

Argenteuil (no.2)

Beauharnois (6)

Brome (10)

Chambly (11)

Iberville (28)

Maskinonge (39)

Particularly stable

Rimouski (no. 58)

Soulanges (63)

Saint Maurice (67)

Vaudreuil (72)

Yamaska (75)

Particularly unstable

Rouville (no. 59)

Saguenay (60)

Sherbrooke (62)

Saint Hyacinthe (65)

Saint Jean (66)

Those counties identified as having been particularly unstable in their attendance rate are all located in the southern part of the province with the exception of the county of Saguenay, (see Appendix I). The proximity of the industrial centers could have been responsible for this instability in the attendance rates.

There is a correlation of $-.34$ between the average rate for each county and the corresponding stability score, indicating that the counties having a high average rate tend to be more stable than those having a low average rate. This fact is verified by comparing the lists of the counties having high and low average rates with those of the counties whose rates are considered as particularly stable and particularly unstable. Five out of the nine counties identified as having maintained a high attendance rate have also been found stable in their rate. They are:

Joliette (no. 29)

Levis (36)

Nicolet (51)

Saint Maurice (no. 67)

Yamaska (75)

Two out of the ten counties identified as having maintained a low attendance rate have also been considered as particularly unstable in their rate. They are:

Beauharnois (no. 6)

Saguenay (60)

To this point, the school population has been considered as a whole without any differentiation for the sexes. This analysis by sex will be the purpose of the remaining part of this chapter.

VI. THE DISTRIBUTIONS OF OBSERVED RATES FOR MALES: THEIR CHARACTERISTICS

Table IV, presents the same kind of information as Table I, page 18, but for males only. From the comparison of these two tables it appears that the distributions of rates for males have a slightly larger range than the distributions for the population as a whole. Another interesting observation is that the highest rate for males in 1951 is 58.0% when it is only 55.0% for males and females combined. For this same year, only 26 (39.4%) of the counties have a rate below 50.0% for males, when 36 (54.5%) of them have a rate inferior to 50.0% when there is no sex differentiation.

TABLE IV

SCHOOL ATTENDANCE RATES FOR MALES FOR THE CENSUS
COUNTIES OF THE PROVINCE OF QUEBEC, AS OBSERVED
IN 1901, 1931, 1941 AND 1951

Rates %	1901		1931		1941		1951	
	a 1	b 2	3	4	5	6	7	8
28	2	2						
29		2						
30		2						
31	4	6						
32	3	9	1	1				
33		9		1				
34	4	13		1				
35	3	16		1				
36	2	18		1				
37	1	19		1	1	1		
38	5	24		1			1	1
39	6	30		1		1		1
40	7	37	1	2		1		1
41	4	41	2	4	1	2		1
42	5	46	3	7	2	4		1
43	4	50	6	13	3	7	1	2
44	6	56	1	14	7	14		2
45	2	58	2	16	11	25	2	4
46	3	61	8	24	8	33	2	6
47		61	12	36	7	40	2	8
48	3	64	5	41	11	51	8	16
49	2	66	9	50	6	57	10	26
50			5	55	2	59	10	36
51			4	59	2	61	11	47
52			4	63	2	63	5	52
53			1	64	1	64	6	58
54				64		64	3	61
55			2	66	1	65	1	62
56					1	66	2	64
57							1	65
58							1	66

a: Columns 1, 3, 5 and 7 indicate the number of counties having the same rate.

b: Columns 2, 4, 6 and 8 indicate the number of counties having a given rate or a lower one.

The same county (Saguenay) which contributed to enlarge the range of the distributions of rates for school population as a whole, affects in the same way the distributions of rates for males.

Here again a trend toward a general increase of the rates and toward a greater homogeneity is noticeable.

The statistical analysis of these distributions of rates is presented in Table V. By comparing this table with Table II, page 20, it is observed that the median for the males has always been higher than for both sexes together. Furthermore the drop in the median in 1941 has not been as marked for the males as for males and females combined. It is of interest to note also that the dispersion as expressed by the quartile deviation has been greater for the males, with the exception of 1951, when the dispersion was smaller for the males than for both sexes. Considering the whole fifty year period, there has been a decrease of 2.40 in the quartile deviation insofar as rates for males are concerned. For the same period of time the decrease was 1.50 for males and females combined.

The measure of skewness as shown in Table V does not indicate any definite trend. The trend would have been from a negatively skewed distribution in 1901 to a more negatively skewed distribution in 1931. Since 1931 the trend would have been toward normality, so long as 1941 is not considered.

TABLE V

MEASURES OF CENTRAL TENDENCY, DISPERSION, SKEWNESS AND
KURTOSIS FOR THE DISTRIBUTIONS OF OBSERVED ATTENDANCE
RATES FOR MALES FOR THE CENSUS COUNTIES OF THE
PROVINCE OF QUEBEC IN 1901, 1931, 1941 AND 1951

Measures	1901	1931	1941	1951
Median	40.10	47.60	46.80	50.20
Q	4.10	2.20	1.70	1.70
Skewness	-0.303	-0.819	+0.243	-0.463
Kurtosis	-0.482	+1.906	+1.184	+2.020

The measure of kurtosis seems to indicate a trend toward leptokurtosis. The distribution was platykurtic in 1901, it was leptokurtic in 1931 and more leptokurtic in 1951.

VII. THE DISTRIBUTIONS OF RATES FOR FEMALES:

THEIR CHARACTERISTICS

The distributions of rates for females as presented by Table VI, suggest a trend toward uniformity between 1901 and 1931 followed by a trend in the opposite direction between 1931 and 1951. This can be observed from the ranges of the distributions.

It is interesting to note that in 1951 the county of Saguenay had a school attendance rate for females much closer to the mean than it had for males.

Also interesting is the fact that even if the proportion of the counties having a rate lower than 50% is about the same for males and females up to 1941, in 1951, 45 counties (68.2%) had a rate for females lower than 50% compared with 26 counties (39.4%) for males and 36 counties (54.5%) for both males and females. This would indicate a decline in the school attendance rate for girls in 1951,

Table VII provides the results of the statistical analysis of the characteristics of the distributions of

TABLE VI

SCHOOL ATTENDANCE RATES FOR FEMALES FOR THE CENSUS COUNTIES
OF THE PROVINCE OF QUEBEC AS OBSERVED
IN 1901, 1931, 1941 AND 1951

Rates %	1901		1931		1941		1951	
	a 1	b 2	3	4	5	6	7	8
29	2	2						
30		2						
31	4	6						
32		6						
33	3	9						
34	1	10						
35	1	11	1	1				
36	2	13		1				
37	5	18		1				
38	6	24		1	1	1		
39	8	32		1		1		
40	4	36		1		1	1	1
41	5	41		1	1	2	1	2
42	4	45	1	2	2	4	1	3
43	6	51	3	5	2	6	2	5
44	7	58	3	8	5	11	4	9
45	5	63	3	11	10	21	4	13
46	2	65	8	19	14	35	6	19
47		65	14	33	12	47	8	27
48	1	66	9	42	9	56	10	37
49			4	46	3	59	8	45
50			6	52	2	61	5	50
51			4	56	2	63	7	57
52			5	61	1	64	3	60
53			4	65	1	65	3	63
54			1	66	1	66	2	65
55							1	66

a: Columns 1, 3, 5 and 7 indicate the number of counties having the same rate.

b: Columns 2, 4, 6 and 8 indicate the number of counties having a given rate or a lower one.

TABLE VII

MEASURES OF CENTRAL TENDENCY, DISPERSION, SKEWNESS AND
 KURTOSIS FOR THE DISTRIBUTIONS OF OBSERVED ATTENDANCE
 RATES FOR FEMALES FOR THE CENSUS COUNTIES
 OF THE PROVINCE OF QUEBEC IN 1901,
 1931, 1941 AND 1951

Measures	1901	1931	1941	1951
Median	39.80	47.50	46.40	48.10
Q	3.00	2.00	1.30	2.20
Skewness	-0.557	-0.754	+0.037	-0.135
Kurtosis	-0.454	+2.502	+1.771	-0.200

rates for females. Comparing the data in Tables V and VII, it can be noted that the median for females has always been lower than for males. This difference which was rather slight up to 1941 increased during the last decade. It was .30 in 1901, .20 in 1931, .40 in 1941 and 2.10 in 1951. After 1941, it would seem then that school attendance for girls failed to progress at the same rate as that for boys. The trend toward uniformity suggested by the evolution of the quartile deviation between 1901 and 1941 has been reversed between 1941 and 1951. Moreover, the dispersion which has been smaller for the girls' rates than for the boys' rates during the first forty years was much greater for the girls' rates in 1951.

The distribution of attendance rates for females was negatively skewed in 1901, then became more negatively skewed in 1931, positively skewed in 1941 and finally slightly negatively skewed in 1951. Since 1931 the trend seems to be toward normality. A trend similar to the one that has been noticed for the males (page 31).

As far as kurtosis is concerned the trend would be, if the 1941 case is not considered, from leptokurtic in 1931 to platykurtic in 1951, a trend which is opposite to the one observed with regard to the males' rates (page 33).

VIII. THE CORRELATIONS

As has already been mentioned, the coefficient of correlation is used to see to what extent the relative order of the counties has changed during the period under study.

The coefficients of correlation between the distributions of rates for males at different times can be found in Table VIII, and those between the distributions of rates for females in Table IX.

Table X presents the coefficients between the distributions of rates for males and for females while Tables XI and XII show respectively the relationship between the distributions of rates for males and for the total school population and between the distributions of rates for females and for the total population.

A comparison of Tables VIII and IX reveals that the relative order of the counties has been a little more unstable as far as attendance rates for girls are concerned. Both tables however show a constant change in the relative order of the counties without any tendency to adopt a definite order or to come back to an original order.

In Table VIII, the correlation of .48 between 1931 and 1951 compared with .53 between 1901 and 1931, taking into account the difference in length between the two periods, suggests that the relative order of the counties

TABLE VIII

COEFFICIENTS OF CORRELATION FOR MALES BETWEEN THE
DISTRIBUTIONS OF OBSERVED RATES FOR THE CENSUS
COUNTIES OF THE PROVINCE OF QUEBEC
IN 1901, 1931, 1941 AND 1951

	1931	1941	1951
1901	.53	.35	.19
1931		.76	.48
1941			.53

TABLE IX

COEFFICIENTS OF CORRELATION FOR FEMALES BETWEEN THE
DISTRIBUTIONS OF OBSERVED RATES FOR THE CENSUS
COUNTIES OF THE PROVINCE OF QUEBEC
IN 1901, 1931, 1941 AND 1951

	1931	1941	1951
1901	.47	.30	.12
1931		.73	.56
1941			.53

TABLE X

COEFFICIENTS OF CORRELATION BETWEEN MALES AND FEMALES OF
THE DISTRIBUTIONS OF OBSERVED RATES FOR THE
CENSUS COUNTIES OF THE PROVINCE OF QUEBEC
IN 1901, 1931, 1941 AND 1951

		Females			
		1901	1931	1941	1951
M a l e s	1901	.89			
	1931		.48		
	1941			.49	
	1951				.63

TABLE XI

COEFFICIENTS OF CORRELATION BETWEEN MALES AND COMBINED
 MALES AND FEMALES OF THE DISTRIBUTIONS OF
 OBSERVED RATES FOR THE CENSUS COUNTIES
 OF THE PROVINCE OF QUEBEC IN
 1901, 1931, 1941 AND 1951

		Males - Females			
		1901	1931	1941	1951
M a l e s	1901	.94			
	1931		.79		
	1941			.89	
	1951				.90

TABLE XII

COEFFICIENTS OF CORRELATION BETWEEN FEMALES AND COMBINED
MALES AND FEMALES OF THE DISTRIBUTIONS OF
OBSERVED RATES FOR THE CENSUS COUNTIES
OF THE PROVINCE OF QUEBEC IN
1901, 1931, 1941 AND 1951

		Males - Females			
		1901	1931	1941	1951
Females	1901	.94			
	1931		.81		
	1941			.82	
	1951				.89

based on the school attendance rates for males has been more variable after 1931. The coefficient of correlation of .76 between 1931 and 1941 is an indication that the greatest variability in the last period took place between 1941 and 1951.

Insofar as the attendance rates for girls are concerned it is seen that the first period from 1901 to 1931 has been the most variable, an observation which is contrary to that stated for the boys. During the second period, again, the greatest variability took place between 1941 and 1951.

Table X, showing the relationship between the relative order of the counties based on school attendance rates for boys and school attendance rates for girls permits a number of interesting observations. For instance, the correlation of .89 in 1901 indicates that at that time the attendance rates were almost the same for boys and girls. The situation changed however between 1901 and 1931 since the correlation dropped down to .48 in 1931. It stayed about the same, .49 in 1941, and then moved back toward the situation as it was in 1901 with a coefficient of .63 in 1951. These data would suggest that in general the counties now have a greater tendency than in the 20's and 30's to have equal attendance rates for both girls and boys. It seems

logical to consider this tendency as an effect of the compulsory attendance law.

Tables XI and XII do not provide much information that has not already been furnished by other tables. They present almost similar coefficients of correlation with regard to males or females. It seems that the greatest difference occurred in 1941 with a coefficient of .89 for males and .82 for females. The data for 1941, however, have always presented a peculiar situation. These two tables indicate that the attendance for females is as good a predictor of the attendance for males and females combined as is the attendance for males.

IX. THE AVERAGE RATES

Following the same procedure as described earlier in this chapter, an average rate for the whole period has been found for each county and each sex. The purpose of these average rates is to identify those which have maintained throughout the whole period a high rate and also those which have maintained a low rate. The following counties have been found as having maintained a high average rate:

For males

Argenteuil (no. 2)

Chambly (11)

For females

For males

Deux Montagnes (18)

Joliette (29)

Levis (36)

Nicolet (51)

Quebec (55)

Saint Maurice (67)

Yamaska (75)

For females

Chateauguay (no. 15)

Compton (17)

Deux Montagnes (18)

Joliette (29)

Kamouraska (30)

Lotbiniere (38)

Nicolet (51)

Soulanges (63)

Yamaska (75)

And those having maintained a low average rate are:

For males

Abitibi (no. 1)

Gaspé, Iles de la Madeleine

(22-23-24)

Hull, Gatineau (25-26)

Labelle (31)

Papineau (52)

For females

Beauharnois (no. 6)

Chicoutimi (16)

Hull, Gatineau (25-26)

Labelle (31)

Montmagny (45)

Montmorency (46-47)

For malesFor females

Pontiac (no. 53)

Quebec (no. 55)

Saguenay (60)

Saguenay (60)

Sherbrooke (62)

Saint Hyacinthe (65)

Temiscamingue (68)

X. STABILITY OF THE COUNTIES' RATES

Following the same procedure as described earlier with regard to the attendance rates for males and females together, the stability of the counties' rates for males and for females has been evaluated. Those counties have been identified whose rates have been particularly stable or particularly unstable.

The counties whose rates have been found particularly stable, are:

For malesFor females

Abitibi (no. 1)

Arthabaska (no. 3)

Beauce (5)

Beauce (5)

Brome (10)

Champlain (12)

Dorchester (19)

For males

Drummond (no. 20)

Huntington (27)

Kamouraska (30)

Sherbrooke (62)

Stantead (64)

Vaudreuil (72)

Yamaska (75)

For females

Kamouraska (no. 30)

Maskinonge (39)

Megantic (42)

Rimouski (58)

Saint Maurice (67)

Terrebonne (71)

The counties of Beauce and Kamouraska are the only which have been stable for both sexes. The following counties' rates have been found particularly unstable:

For males

Argenteuil (no. 2)

Chambly (11)

Chicoutimi (16)

For females

Argenteuil (no. 2)

Beauharnois (6)

Chambly (11)

Chicoutimi (16)

Hull, Gatineau (25-26)

Iberville (28)

Lac Saint Jean (32-33)

For males

Missisquoi (no. 43)

Ile Jesus, Montreal (48-49)

Richelieu (56)

Rouville (59)

Saguenay (60)

Saint Maurice (67)

Temiscamingue (68)

For females

Pontiac (no. 53)

Saguenay (60)

Saint Hyacinthe (65)

Temiscamingue (68)

The counties of Argenteuil, Chambly, Chicoutimi, Saguenay and Temiscamingue have been unstable for both males and females. The county of Saint Maurice has been stable for females but unstable for males.

Comparing the counties with high and low average rates with those considered as stable and unstable, it is found that in the case of the males, the county of Yamaska had a high average and was particularly stable in its rate; the counties of Argenteuil, Chambly and Saint Maurice had a high average rate but were unstable in their rates; finally, the counties of Saguenay and Temiscamingue had low average rates and were particularly unstable.

In the case of the girls, the counties of Beauharnois, Chicoutimi, Hull-Gatineau, Saguenay and Saint Hyacinthe had

low average rates and were particularly unstable.

Correlating average rate with stability reveals that there is a correlation of .01 in the case of the males and -.14 in the case of the females. This means that the tendency mentioned earlier, with regard to the rates for the combined sexes to the effect that the counties which maintained a relatively high rate tended to be more stable in their rate than those whose rates have been relatively low, holds in the case of the females' rates but not for the males' rates.

A coefficient of correlation of .46 has been found between stability in the rates for males and stability in the rates for females. This would indicate that only 21.2% of the variance in the males' rates is associated with similar variance in the females' rates. It is hoped that the following study of the influence of different factors on attendance rates will provide an explanation for this situation.

SUMMARY

This chapter was concerned with the attendance rates as observed in different areas of the Province of Quebec as well as their evolution from 1901 to 1951. The purpose was to become better acquainted with the problem the present research intends to deal with. The following points emerged

from this brief analysis.

1. The median of the counties' rates has increased regularly since 1901, with the exception of the period from 1931 to 1941 which has presented a special case. This increase has been greater for the period before 1931 than for the period after 1931 insofar as total rates (both sexes) are concerned. The median of the counties' rates for males has always been higher than for the total rates or females' rates. They have also been affected to a lesser degree by the unfavorable circumstances of the 30's. It has been noticed that the median of the counties' rates for females has been lower all through the years but at no time has this difference been larger than in 1951.

2. The dispersion of the counties' attendance rates has decreased from one decade to another, indicating a trend toward uniformity. This observation holds for the total rates (males and females) and for the males rates. In the case of the females rates, dispersion has decreased from 1901 to 1931 but increased thereafter.

The dispersion of the counties' rates for males has been greater than the dispersion of the total rates (both sexes) with the exception of 1951 at which time the dispersion was smaller for males' rates.

Considering the females' rates, the evolution has been

in the opposite direction. The dispersion of these rates was smaller than for total rates and males' rates prior to 1951 at which time it was the largest.

3. Considering the skewness of the distribution of counties' rates, the trend has been from negative skewness to positive skewness. It seems that in 1901 there was a mass of counties having a relatively high attendance rate (for the time) and fewer counties with a low rate. In 1951, the situation reversed with a mass of counties having about the same rate and a few counties with a high rate. This observation applies to total rates (both sexes) and males' rates. Taking the males' rates and the females' rates separately, the trend seems to be more toward normality.

4. The measure of kurtosis for the distributions of counties' rates has revealed a trend from leptokurtosis to normality in the case of the total rates. The trend insofar as males' rates are concerned is toward a higher degree of leptokurtosis. The distribution of females' rates which was leptokurtic in 1931 became platykurtic in 1951.

5. The relative order of the counties' rates seems to have been in constant change without any indication of a trend toward stability. Moreover, at no time did this relative order come back to what it had been formerly. This change has accelerated after 1931 and particularly after 1941.

The same observation holds for the combined rates and males' rates but not for the females' rates for which the most variable period seems to have been from 1901 to 1931.

Generally speaking the relative order of the counties' rates for females has been slightly more stable than the same order based on combined rates or on males' rates. There was a rather high degree of consistency in 1901 between attendance rates for boys and for girls. This consistency decreased substantially thereafter to increase again in 1951 but not to the point of 1901.

6. The counties with relatively high attendance rates during the whole fifty year period tended to be slightly more stable in their rate than did the counties whose attendance rate was relatively low. This condition holds for the combined rate (both sexes) and the females' rate but not for the males' rate.

The counties whose male rate has been rather stable have tended to be also stable in their rate for females. The coefficient of correlation in this case is .46.

CHAPTER III

THE INFLUENCE OF THE AGE-STRUCTURE OF THE SCHOOL-AGE POPULATION ON SCHOOL ATTENDANCE RATES

This chapter is a study of the influence of the age-structure of the school-age population on school attendance rates. It is based on the assumption that the age-structure of this segment of a population varies from one county to another and for the same county from one time to another, and that these variations cause the school attendance rate in one county to be lower or higher than in another county, even if the prevailing attitude toward schooling is the same in both counties.

I. ISOLATION OF THE INFLUENCE OF THE AGE-STRUCTURE FACTOR

Age-structure being one factor among others having an influence on school attendance rates, a means of isolating this particular influence had to be devised. As it is impossible to imagine a case where there is no age-structure influence because this would mean no population at all, a kind of "standard" population had to be selected, to which the age-structure of other populations could be compared. In the present case, the population of the Province of Quebec as a whole in 1951 has been selected as the standard population.

The intent being to evaluate the effect or influence of variations in age-structure upon school attendance rates, particular rates had to be computed for each county, rates which would be affected by differences in age-structure only. These new rates will be referred to as standardized rates.

Figure 1 provides an illustration of the method used to find the standardized rate for a given county. The standard attendance rate and the specific standard attendance rates for each age group are given. (It will be recalled that these are the rates computed for the province as a whole for the base year, 1951). With these data it is a simple step to calculate the standardized rate for any particular county, at any particular time. For instance, in the case of the County X, the standard specific rates are merely applied to the actual distribution of school-age population and an expected school population is computed for each group. The ratio of the total of this expected school population to the actual school-age population is the standardized rate for the county.

The standard attendance rate for the province is 47.8% while the standardized attendance rate for County X is 58.9%. The difference in rates is due simply to the difference in the age-structure of the school-age population found in the province in 1951 and in County X.

Figure 2 illustrates the method used to find the influence of the age-structure factor, the influence of the socio-economic factors, and the resulting total influence of all factors. It has already been established that the difference between the standardized rate for a particular county and the standard rate for the province is due to the influence of the age-structure factor. Furthermore the difference between an observed or actual rate for a county and the standard rate is evidently due to the combined influence of all the factors involved since it is a comparison between an actual situation in a county and the situation considered as standard. It follows logically, then that the difference between the actual rate of a county and its standardized rate must be due to all factors other than age-structure. This is shown graphically in the upper section of Figure 2.

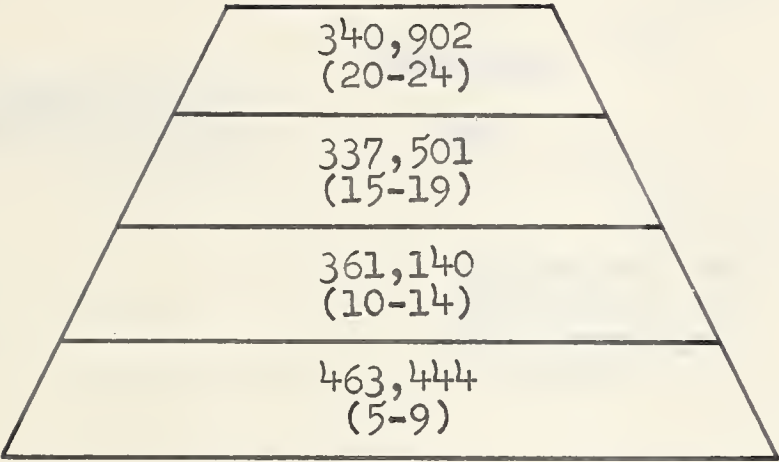
In the same figure are also presented two cases which exemplify the method already discussed to isolate the different influences. Before examining these cases however two points need to be mentioned. First of all, a county's rate, be it actual or standardized, is always compared to the standard rate but never the opposite. The purpose is to be able to tell from the sign of the difference if the county has had a higher or lower rate than the province as a whole.

PROVINCE (1951)

Standard
school-age
population

Standard
school
population

Standard
specific
rates



15,341

4.5%

100,913

29.9%

323,220

89.5%

278,993

60.2%

Totals: 1,502,987

718,467

Standard attendance rate: $\frac{718,467}{1,502,987} = 47.8\%$

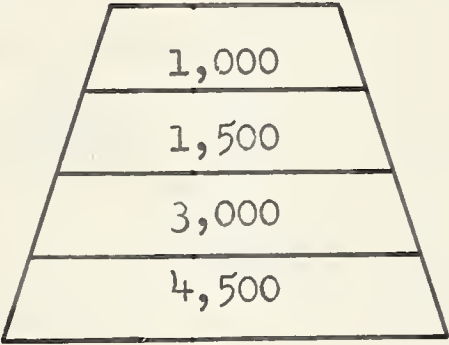
COUNTY X

Age-groups

School-age
population

Standard
specific
rates

Expected
school
population



20-24

1,000

4.5%

45

15-19

1,500

29.9%

449

10-14

3,000

89.5%

2,685

5-9

4,500

60.2%

2,709

Totals:

10,000

5,888

Standardized attendance rate: $\frac{5,888}{10,000} = 58.9\%$

FIGURE 1

ILLUSTRATION OF THE METHOD USED TO FIND THE
STANDARDIZED RATE FOR A GIVEN COUNTY

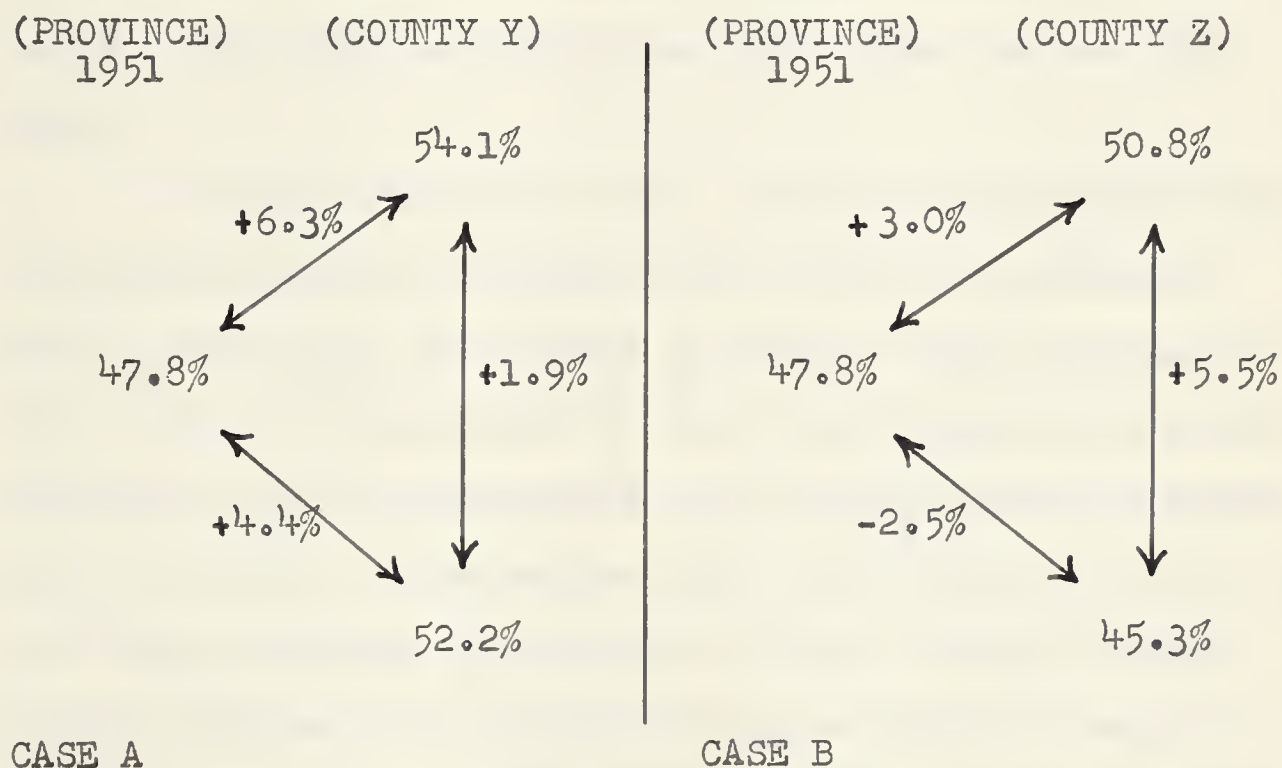
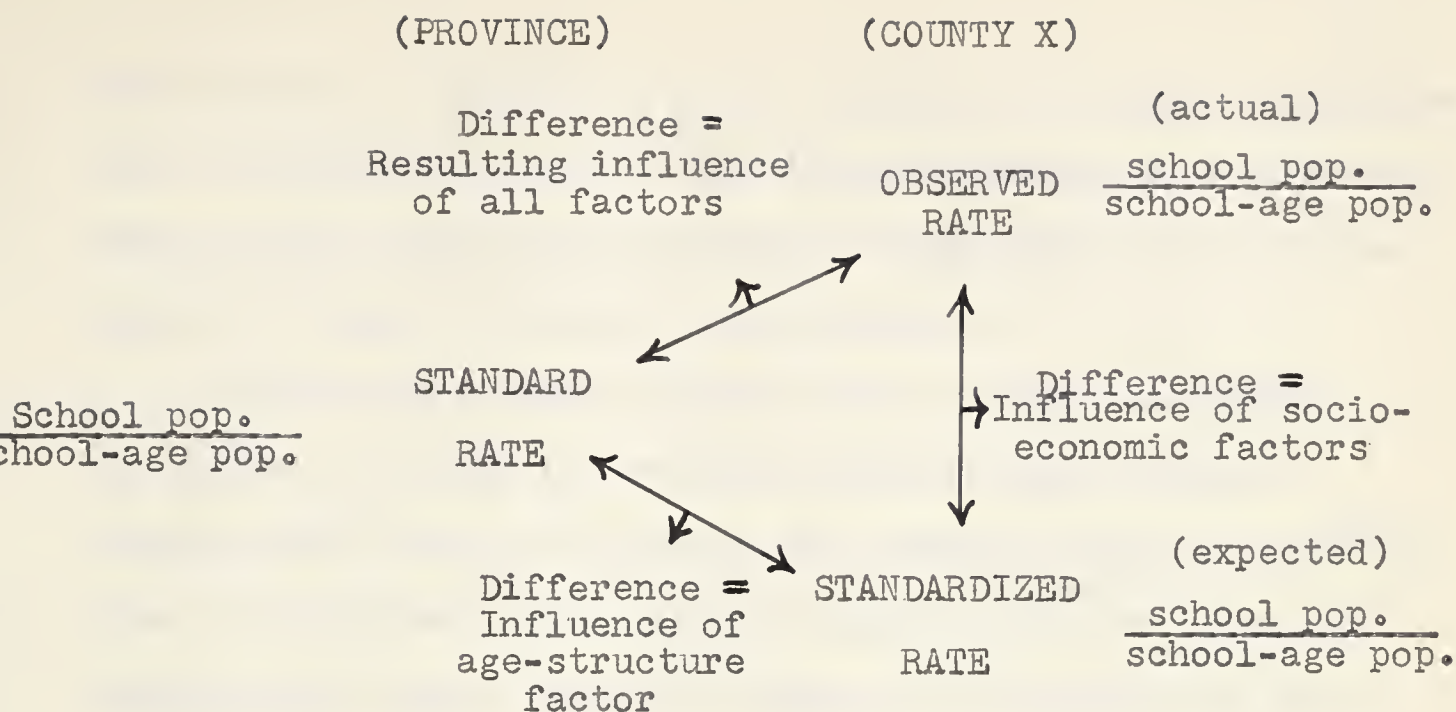


FIGURE 2

ILLUSTRATION OF THE METHOD USED TO FIND OUT THE INFLUENCE OF THE
AGE-STRUCTURE FACTOR, THE INFLUENCE OF SOCIO-ECONOMIC
FACTORS AND THE RESULTING INFLUENCE
OF ALL THE FACTORS

1. 1910

2. 1911

3. 1912

4. 1913

5. 1914

6. 1915

7. 1916

8. 1917

9. 1918

10. 1919

11. 1920

12. 1921

13. 1922

14. 1923

15. 1924

16. 1925

17. 1926

18. 1927

19. 1928

20. 1929

21. 1930

22. 1931

23. 1932

24. 1933

25. 1934

The second, is that for a given county, the actual or observed rate is always compared to the standardized rate so that the sign of the difference indicates if the actual rate for the county is higher or lower than expected.

This being said, Figure 2 will become more understandable. In Case A, both the observed rate and the standardized rate for County X are greater than the standard rate. Furthermore, the observed rate is greater than the standardized rate. In such a case, it could be said that both the influence of the age-structure factor and the influence of the socio-economic factors contribute to increase the observed attendance rate above the standard rate.

It is, however, not only possible but probable that for some counties the standardized rate or the observed rate or even both rates might be smaller than the standard rate. This is illustrated by Case B in Figure 2, in which the county has a standardized rate of 45.3% and an observed rate of 50.8%. By comparison with the standard rate of 47.8%, the total influence is positive ($50.8\% - 47.8\% = +3.0\%$), but the influence of the age-structure factor is negative ($45.3\% - 47.8\% = -2.5\%$). To counteract this negative influence and maintain the total influence of +3.0%, the influence of "other factors" or socio-economic factors must be +5.5%. This is the difference between the observed rate

and the standardized rate for the county.

Suppose, in another case, that the influence of the age-structure factor was $+10.0\%$ and that of the socio-economic factors -10.0% , the total influence would be zero and the observed rate the same as the standard rate. All these possibilities serve to show how inadequate an observed rate might be as a basis to judge the attitude of a county toward schooling. This attitude can be judged through the difference between the observed rate and the standardized rate or in other words, only when the influence of the age-structure factor has been eliminated.

Before attacking the analysis of the comparisons established between standard rate, standardized rates and observed rates for each county, each census and each sex, two points need to be discussed. The first is that the difference between a standardized rate and the standard rate (the influence of the age-structure factor) does not reflect all the differences in age-structure but only those which have an effect on school attendance. In other words two counties' standardized rates might be identical but this does not mean that the age-structure is exactly the same in the two counties. This simply means that between the two age-structures there is no difference having an impact on school attendance rates. There could be a counterbalancing

effect. A decrease in one segment of the school-age population would be accompanied by an increase in one or two other segments. This could result in identical global rates. This counterbalancing effect is demonstrated in Table XIII.

From this table it can be seen that there has been for County A, time 2, in comparison with time 1 a decrease of 200 in the segment 5-9 where the specific attendance rate was 60%, an increase of 100 in the segment 9-14 where the rate was 90% and an increase of 100 in the segment 14-19 where the rate was 30%. These changes in the age-structure have, however, no effect on the total number of pupils in school. As a result the global rate remains the same. There could then be differences in age-structure which are not shown by the rates simply because they have no effect on school attendance insofar as it is expressed by a global rate. It can be seen that this kind of counterbalancing effect is likely to happen in a fast growing population or a declining population. Since the rate of growth of a population is always fluctuating to a certain extent, this effect is probably always present to some degree.

The second point concerns the accuracy of the difference between an observed rate and a standardized rate as an indication of the influence of other factors. In question

TABLE XIII

THE COUNTERBALANCING EFFECT OF SOME CHANGES
IN THE AGE-STRUCTURE OF A POPULATION

Age groups	Population	Provincial specific rates	Expected school population	Global rate
<u>County A: Time 1</u>				
19-24	1,000	5%	50	
14-19	1,500	30%	450	
9-14	3,000	90%	2,700	
5- 9	4,500	60%	2,700	
	<u>10,000</u>		<u>5,900</u>	59%
<u>County A: Time 2</u>				
19-24	1,000	5%	50	
14-19	1,600	30%	480	
9-14	3,100	90%	2,790	
5- 9	4,300	60%	2,580	
	<u>10,000</u>		<u>5,900</u>	59%
<u>County A: Time 3</u>				
19-24	1,000	5%	50	
14-19	1,700	30%	510	
9-14	3,200	90%	2,880	
5- 9	4,100	60%	2,460	
	<u>10,000</u>		<u>5,900</u>	59%
<u>County A: Time 4</u>				
19-24	1,000	5%	50	
14-19	2,300	30%	690	
9-14	3,800	90%	3,420	
5- 9	2,900	60%	1,740	
	<u>10,000</u>		<u>5,900</u>	59%

form, is it possible for a county to have an observed rate equal to its standardized rate even if the observed specific rates are not the same as the standard specific rates? The answer is yes, and Figure 3 illustrates how it can happen. It must be noticed, however, that a small decrease in the specific rates for the lower segments of the structure would have to be accompanied by a very large increase in the specific rates for the higher segments in order to maintain the same total school population and consequently the same global rate. This effect is certainly possible, but in the present study the assumption has been made that the attitude of the counties is consistent so that a high specific rate at the top part of the pyramid of ages would be accompanied by a higher rate at the bottom of the pyramid and vice versa. It is not likely that there would be a large proportion of the group 14-19 attending school if school attendance at the lower levels is not also high. The fact remains, however, that there could be slight differences in the attitude toward schooling which are not shown by the comparison of observed and standardized rates.

II. THE DIFFERENCES BETWEEN RATES

As it has been discussed in the preceding section, an observed attendance rate can be computed for each county,

COUNTY X

Age-Groups	School-age population	Standard specific rates	Expected school population
19-24	1,000	5%	50
14-19	1,500	30%	450
9-14	3,000	90%	2,700
5-9	4,500	60%	<u>2,700</u>
Totals:	10,000		5,900

Standardized rate: $\frac{5,900}{10,000} = 59\%$

Age-groups	School-age population	Observed specific rates	Observed school population
19-24	1,000	5%	50
14-19	1,500	40%	600
9-14	3,000	85%	2,550
5-9	4,500	60%	<u>2,700</u>
Totals:	10,000		5,900

Observed attendance rate: $\frac{5,900}{10,000} = 59\%$

FIGURE 3

ILLUSTRATION OF A WEAKNESS OF THE DIFFERENCE BETWEEN OBSERVED AND STANDARDIZED RATES AS AN INDICATION OF THE INFLUENCE OF FACTORS OTHER THAN THE AGE-STRUCTURE FACTOR

using actual figures and a standardized attendance rate can also be found by applying the specific standard rates to the age-structure of the county. This standardized rate would be the expected rate for a county assuming that the influence of factors other than age-structure is neither stronger nor weaker in this county than it was in the province as a whole in 1951. Finally, the standard rate, that is the global attendance rate for the province in 1951 serves as a reference point to determine the deviations in the rates of the counties, be they observed or standardized rates.

From what has been said, the total or more precisely the resulting influence of all the factors can be identified as the difference between an observed rate and the standard rate. The difference between a standardized rate and the standard rate is caused by differences in the age-structure and finally the difference between an observed and a standardized rate is the influence of factors other than age-structure or socio-economic factors.

The Resulting Total Influence

The resulting total influence being the difference between the observed rates and the standard rate, which is a constant, what has already been said in chapter II, when analysing the observed rates also applies here.

The Influence of the Age-Structure Factor

The influence of the age-structure factor is the real concern of this chapter. It must be kept in mind that this influence as measured by the differences between the standardized rates and the standard rate is not an absolute influence but rather a relative influence in terms of deviation from a basic standard age-structure, that is, the age-structure of the province in 1951.

Statistical analysis of the differences caused by variations in age-structure.

For each county and each census, differences have been calculated between the standardized rates and the standard provincial rate. As an illustration the differences found in 1951 are presented in Table I, Appendix B. These differences that are considered to be caused by variations in the age-structure of the school-age population of individual counties have been arranged into four distributions of differences, one for each census. The distributions of differences for 1951 is shown in Table II, Appendix B. The four distributions of differences just described are for males and females combined but the present study being also concerned with males and females separately, an equal number of distributions of differences have been arranged for

each one of the two sexes. A statistical analysis of all the distributions of differences has been undertaken in order to study the characteristics of such distributions and possibly discover trends in the influence of the age-structure of the school-age population on school attendance rates. Tables XIV, XV and XVI present the result of this analysis in terms of central tendency, dispersion, skewness and kurtosis. The first table is concerned with males and females combined while the second and the third deal with males and females respectively. The three tables will be discussed together in order to make easier the observation of similarities and dissimilarities between sexes.

It can be seen from these tables that the median of the differences in attendance rates caused by the age-structure factor has always been positive. Since these differences are in fact positive and negative deviations of the standardized rates from the standard rate which, by its very nature, is a kind of average rate for the province, the median of a distribution of such differences would be expected to be zero. The explanation for the positive median is to be found in the fact that in computing the standard rate, the school population and the school-age population for the province as a whole have been taken, while in computing the median of the deviations from the standard rate, each county has been counted for one,

TABLE XIV

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' STANDARDIZED RATES FOR MALES AND FEMALES
COMBINED AND THE STANDARD PROVINCIAL RATE

Measures	1901	1931	1941	1951
Median	+2.70	+1.90	+1.00	+2.00
Q	0.70	1.00	1.10	1.20
Skewness	-0.920	-0.985	-0.650	-0.839
Kurtosis	+3.230	+0.880	+0.206	+1.071

TABLE XV

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' STANDARDIZED RATES FOR MALES
AND THE STANDARD PROVINCIAL RATE

Measures	1901	1931	1941	1951
Median	+1.90	+1.00	+0.30	+1.50
Q	0.70	1.10	0.90	1.10
Skewness	-0.688	-0.744	-0.698	-0.753
Kurtosis	+0.843	+1.571	+1.050	+3.492

TABLE XVI

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' STANDARDIZED RATES FOR FEMALES
AND THE STANDARD PROVINCIAL RATE

Measures	1901	1931	1941	1951
Median	+3.20	+3.00	+1.70	+2.60
Q	0.70	1.20	1.20	1.30
Skewness	-1.764	-0.946	-0.761	-0.682
Kurtosis	+4.801	+0.530	+2.30	+0.561

regardless of its population. For example, the two counties of Quebec and Montreal, which account for more than one third of the provincial school-age population, have had a great influence on the standard rate but have been considered as two counties out of sixty-six in computing the median of the deviations from the standard rate. Knowing that these two counties are mostly urban with a much larger proportion of children between fifteen and twenty-five years of age than the rural counties which are in majority, it is not surprising that the median of the deviations of the counties rates from the standard provincial rate is found to be positive. It must be remembered that for a given area, an increase in the population fifteen to twenty-five years of age tends to reduce the global attendance rate because a smaller proportion of the children in this group of ages attend school.

The median has always been higher for the females than for the males or for both sexes together. This would suggest that the differences in age-structure between the urban and the rural counties were greater for the females than for the males. There are a number of possible explanations for this phenomenon, the more plausible being related to the mobility of the population within the province and to the immigration from other provinces or counties. Considering the mobility of the population, it could happen that the females, fifteen to twenty-five years of age move in larger number than the

males from rural areas to urban centers. Such a movement would result in increasing the global attendance rate for females in rural areas and in decreasing the same rate in urban centers. Another possibility is that the male population fifteen to twenty-five years of age is as mobile as or even more mobile than the female population of the same age but that the males move more likely from one rural area to another rural area. For example, lumbering and mining attract a larger number of young workers. Such a movement could increase the attendance rate for males in some areas and reduce it in others but the number of areas affected being much larger than in the case of the females, the discrepancies between counties would remain smaller. Regarding immigration, it is possible that males between fifteen and twenty-five years of age tend to migrate in rural areas, attracted by farming, lumbering and mining particularly.

Tables XIV, XV and XVI also show that the median decreased between 1901 and 1941 indicating a decrease in the discrepancies between rural and urban areas. The last decade, that is from 1941 to 1951 seems to indicate a tendency toward greater discrepancies.

The quartile deviation which was very small in 1901 appears to be in the process of increasing. It was 0.70 in 1901 for males, females, males and females together; in 1951

it was 1.10 for males, 1.30 for females and 1.20 for both sexes.

The year 1941, which in many respect has presented an abnormal situation, continues to disturb the trends. It is interesting to note however that insofar as the influence of the age-structure factor is concerned, the males rates seem to have been more severely affected by the prevailing conditions of 1941. It is probable that entrance in the armed forces has been one of the major causes for this state of affairs.

The distributions of differences, between the standardized rates and the standard rate, have been negatively skewed during the whole period. There is a tendency toward normality in that respect, as far as females are concerned. The distributions of differences between rates for males present an opposite trend. Insofar as the year 1941 is not considered, there has been a slight trend toward a more negatively skewed distribution indicating that more counties tend to have an age-structure for males which favors high attendance rates.

The analysis of kurtosis reveals that, insofar as no sex differentiation is made, the trend has been from leptokurtic to normality between 1901 and 1941 but the trend reversed between 1941 and 1951. The same comment applies to the distribution of differences for females. The trend in

the case of the males, has been from leptokurtic to more leptokurtic. The implication is that in the case of the males, there has been a tendency toward a greater accumulation of counties being affected to about the same extent by the age-structure factor. Remembering that this distribution is also negatively skewed the concentration of cases would be around a positive difference.

Correlations.

As it is recalled, this section of the present chapter deals with distributions of differences between the counties' standardized rates and the standard provincial rate, (see page 65). There was for each census three of these distributions of differences: one for males and females combined, one for males, and one for females.

A number of coefficients of correlation have been computed between these different distributions of differences. For instance, the distributions of differences (for males and females combined, or for males, or for females) for the four censuses, have been intercorrelated. The purpose was to find out if the influence of the age-structure of the school-age population (as measured by the difference between the counties' standardized rates and the standard provincial rate) has been constant from one census to another. A high correlation would indicate that the counties which were

greatly affected by this factor at one time tended to be affected the same way later on and vice versa. Coefficients of correlation have also been computed between sexes in order to see if the influence of the age-structure of the school-age population has been proportional with regard to males and females in the same counties at the same time. A high correlation would indicate that where the age-structure of the male school-age population favors high attendance rates, the age-structure of the female school-age population would also favor high attendance rates. Finally, the influence of the age-structure of the school-age population as expressed by the differences between the counties standardized rates and the standard provincial rate has been correlated with the resulting influence of all the factors as expressed by the differences between the counties' observed rates and the standard provincial rate. The purpose of these correlations was to find out to which extent the size of the counties' observed rates is determined by the respective age-structure of their school-age population.

Between censuses. Tables XVII, XVIII and XIX present the coefficients of correlation found between the distributions of differences between the counties' standardized rates and the standard provincial rate in 1901, 1931, 1941 and 1951. The first table is concerned with both sexes combined while

TABLE XVII

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE DIFFERENCES
BETWEEN THE COUNTIES' STANDARDIZED RATES, FOR MALES AND
FEMALES COMBINED, AND THE STANDARD PROVINCIAL RATE
(INFLUENCE OF AGE-STRUCTURE FACTOR)

Age-structure	Age-structure		
	1931	1941	1951
1901	.42	.29	.39
1931		.40	.68
1941			.57

TABLE XVIII

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE DIFFERENCES
BETWEEN THE COUNTIES' STANDARDIZED RATES FOR
MALES AND THE STANDARD PROVINCIAL RATE
(INFLUENCE OF AGE-STRUCTURE FACTOR)

Age-structure	Age-structure		
	1931	1941	1951
1901	.34	.15	.20
1931		.60	.55
1941			.35

TABLE XIX

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE DIFFERENCES
BETWEEN THE COUNTIES' STANDARDIZED RATES FOR
FEMALES AND THE STANDARD PROVINCIAL RATE
(INFLUENCE OF AGE-STRUCTURE FACTOR)

Age-structure	Age-structure		
	1931	1941	1951
1901	.56	.56	.51
1931		.80	.78
1941			.74

the second and the third are concerned with males and females respectively.

According to Table XVII, the correlations between 1901 and the other years, and also the correlation between 1931 and 1941, seem to indicate that there has been a serious change in the relative order of the counties between 1931 and 1941, as far as the differences caused by the age-structure factor are concerned. This change has been followed by a return to the situation of 1931 between 1941 and 1951. The coefficient of correlation which was .42 between 1901 and 1931 dropped to .29 between 1901 and 1941 and then went up to .39 between 1901 and 1951, almost the same as between 1901 and 1931. The coefficient of correlation which was .40 between 1931 and 1941 became .68 between 1931 and 1951. This means that the situation in 1951 was more like the situation in 1931 than in 1941. The coefficient of .57 between 1941 and 1951 as compared to .68 between 1931 and 1951 supports this observation.

Tables XVIII and XIX reveal that changes in the relative order of the counties have been greater for males than for females. The correlation between 1901 and 1951 was only .20 for males and .51 for females. The change between 1931 and 1941 which has been observed in Table XVII does not appear in the other two tables. This suggests that the correlation between the two sexes is not very high. In

the case of the females it seems that there has been no serious change between 1931 and 1951 since the intercorrelations for this period remained about the same. The correlation of .74 between 1941 and 1951 as compared with .80 between 1931 and 1941 suggests that there has been a slightly larger change after 1941.

As a general comment it could be said then that the age-structure of the school-age population varied from one decade to another in the same counties. The age-structure of the female school-age population remained however more stable during the whole period, and particularly stable after 1931.

Between sexes. As already mentioned, for each census, three distributions of differences between the counties' standardized rates and the standard provincial rate were available. One was for males and females combined while the two others were for males and for females respectively. For each census, these three distributions of differences have been intercorrelated and the coefficients of correlation found are presented in Tables XX, XXI and XXII.

From Tables XX and XXI, it can be seen that, with the exception of 1931, the correlations between the influence of the age-structure factor on the total school attendance and the same influence on school attendance of males and of females,

TABLE XX

CORRELATIONS BETWEEN MALES AND BOTH SEXES COMBINED
WITH REGARD TO THE DISTRIBUTIONS OF DIFFERENCES
BETWEEN THE COUNTIES' STANDARDIZED RATES AND
THE STANDARD PROVINCIAL RATE (INFLUENCE
OF AGE-STRUCTURE FACTOR)

Age-structure (M+F)	Age-structure (M)			
	1901	1931	1941	1951
1901	.84	.35	.26	.21
1931		.87	.65	.43
1941			.91	.45
1951				.93

TABLE XXI

CORRELATIONS BETWEEN FEMALES AND BOTH SEXES COMBINED
WITH REGARD TO THE DISTRIBUTIONS OF DIFFERENCES
BETWEEN THE COUNTIES' STANDARDIZED RATES AND
THE STANDARD PROVINCIAL RATE (INFLUENCE
OF AGE-STRUCTURE FACTOR)

Age-structure (M+F)	Age-structure (F)			
	1901	1931	1941	1951
1901	.85	.40	.37	.32
1931		.69	.70	.63
1941			.93	.63
1951				.92

TABLE XXII

CORRELATIONS BETWEEN MALES AND FEMALES WITH REGARD TO THE
 DISTRIBUTIONS OF DIFFERENCES BETWEEN THE COUNTIES'
 STANDARDIZED RATES AND THE STANDARD
 PROVINCIAL RATE (INFLUENCE
 OF AGE-STRUCTURE FACTOR)

Age-structure (F)	Age-structure (M)			
	1901	1931	1941	1951
1901	.70			
1931		.61		
1941			.76	
1951				.76

are about the same for the same year. For instance, in 1901 the correlation was .84 for males (Table XX) and .85 for females (Table XXI), in 1941 it was .91 for males and .93 for females, and so on. In 1931 however, the correlation for females was only .69, while it was .87 for males.

Generally speaking it would seem that knowing the influence of the age-structure factor on school attendance rates of males or females at a given time, the influence of the same factor on the total attendance could be predicted with a reasonable degree of accuracy.

The correlation found between the influence of the age-structure factor on total attendance (including both sexes) at a given time, and the influence of the same factor on school attendance of a given sex at a different time would not permit accurate prediction from one time to another. If it was to be done, however, this influence could be predicted more accurately for females than for males. For instance, the influence on total attendance in 1931 and the influence on attendance of females in 1951 (Table XXI) correlate at .63, compared with .43 for males (Table XX).

Since the influence of the age-structure factor on school attendance of a given sex is already part of the influence of the same factor on the total attendance (including both sexes), the correlations between one sex and both sexes in that respect are expected to be larger

than between males and females. Table XXII seems to support this observation. In 1901 the coefficient of correlation was .70, .61 in 1931 and .76 in 1941 and 1951. This would mean that since 1941, 57.8% of the variance in the influence of the age-structure factor on school attendance rates for one sex is associated with the variance in the influence of the same factor on school attendance rates for the other sex.

Between the influence of the age-structure factor and the resulting total influence of all the factors including age-structure. Tables XXIII, XXIV and XXV show the coefficients of correlation found between the influence of the age-structure factor and the resulting total influence of all factors on school attendance rates. Table XXIII is concerned with total attendance rates (both sexes) while the other two deal with attendance of males and of females respectively.

According to Table XXIII the correlation between the total influence and the influence of the age-structure factor has always been rather low, but positive. In 1901 this correlation was of .28 and remained about the same in 1931 with .29. Then it dropped to .08 in 1941 and became .45 in 1951. There has been a very slight trend toward greater relationship between 1901 and 1931, a trend which became obvious after 1941, that is, after the disturbing situation

TABLE XXIII

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
 FACTOR AND THE RESULTING TOTAL INFLUENCE OF ALL
 FACTORS ON THE COUNTIES' ATTENDANCE RATES
 FOR MALES AND FEMALES COMBINED

Total influence	Age-structure			
	1901	1931	1941	1951
1901	.28	-.32	-.38	-.18
1931		.29	.02	.16
1941			.08	-.08
1951				.45

TABLE XXIV

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
FACTOR AND THE RESULTING TOTAL INFLUENCE
OF ALL FACTORS ON THE COUNTIES'
ATTENDANCE RATES FOR MALES

Total influence	Age-structure			
	1901	1931	1941	1951
1901	.36	-.19	-.45	-.16
1931		.32	-.18	-.05
1941			.01	-.22
1951				.44

TABLE XXV

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
 FACTOR AND THE RESULTING TOTAL INFLUENCE OF
 ALL THE FACTORS ON THE COUNTIES'
 ATTENDANCE RATES FOR FEMALES

Total influence	Age-structure			
	1901	1931	1941	1951
1901	.22	-.23	-.22	-.09
1931		.36	.24	.39
1941			.35	.27
1951				.55

which prevailed between 1931 and 1941.

Since age-structure is one of the factors whose influence contributed to the resulting total influence, the greatest relationship in 1951 could mean one of two things. It could mean firstly that the influence of the socio-economic factors which explain the remaining part of the resulting total influence became more closely related to the influence of the age-structure factor. It could mean, secondly, that the attitude toward schooling, that is the influence of the socio-economic factors, tended to become more uniform throughout the province so that more of the variance in the resulting total influence would be explained by the variance in the influence of the age-structure factor. The study of the influence of the socio-economic factors which will follow later in this chapter will certainly help in determining which one of these two possibilities is true.

It must be mentioned here that the importance of the influence of the age-structure factor cannot be judged from the correlations presented in Table XXIII. The resulting total influence is measured by the differences between the counties observed rates and the standard provincial rate, which is constant by its very nature. A correlation between any particular influence and the resulting total influence is then the same as a correlation between this particular influence and the observed rates. A low correlation, in this

context, simply means that the counties more seriously affected by this specific factor are not necessarily those having a particularly high or low observed rate. This also means that the observed rates cannot be accurately predicted from the influence of this factor.

An interesting observation from Table XXIII is also that the resulting total influence in 1901, which was positively associated with the influence of the age-structure factor the same year, has been negatively associated with the same influence the following years.

Tables XXIV and XXV provide the same information as Table XXIII, but for males and females respectively. The general pattern is about the same except that the drop in the correlation, observed in Table XXIII for 1941 does not appear in Table XXV, in the case of the females. This would indicate that the prevailing conditions in 1941 which have created an attitude toward schooling such that the influence of the age-structure had no relationship with the observed rate of the males, did not affect the same way the rates of the females. The correlation for the males was .01 in 1941, compared with .32 in 1931 (Table XXIV), while in the case of the females, it was .35 in 1941, compared with .36 in 1931.

Another interesting difference between males and females is that in 1901 the correlation was lower for the females than for the males (.22 and .36 respectively) but

has been higher ever since. In 1951, it was .55 for the females and .44 for the males.

The average influence of the age-structure factor during the fifty year period.

The purpose of this section was to identify the counties whose school attendance rates have been particularly affected by a positive or a negative influence of the age-structure factor during the whole period. In order to obtain this information the average influence of the age-structure factor for the whole period has been found for each county. This has provided a distribution of average influences and the mean and standard deviation of this distribution have been computed. If the average influence of a particular county was at more than one standard deviation above the mean, the county was considered to have been particularly influenced positively by the age-structure factor. If it was at more than one standard deviation below the mean, the county was classified as having been particularly influenced negatively by the age-structure factor.

Following this procedure, the following counties have been identified according to the relative influence of the age-structure factor from 1901 to 1951.

Relatively high positive
influence

Relatively high negative
influence

Beauharnois (no. 6)

Bellechasse (no. 7)

Bonaventure (9)

Frontenac (21)

Missisquoi (43)^a

Jesus-Montreal (48-49)

Quebec (55)

Sherbrooke (62)

Stanstead (64)^a

St Hyacinthe (65)

St Jean (66)

Wolfe 74)

Except for the county of Quebec, all the counties which have been affected by a relatively high negative influence of the age-structure factor since 1901 are situated in the southern part of the province, between the county of Montreal and the american border, (Appendix A). Has this

a

Remembering that the median influence is positive (see Table XIV, page 67), the section of the distribution below the median includes some positive influences. These two counties are on the border line between negative and positive.

been caused by an influence from the United States or by the proximity of large urban centers or by any other factor is a question that cannot be answered from the data available for this research.

Variations in the influence of the age-structure factor from time to time in individual counties.

The purpose of this section is to measure the degree of constance of the influence of the age-structure factor in individual counties. This has been done for each county by finding the average deviation^a from the average influence in that county. For the distribution of average deviation from the average influence, the mean and the standard deviation have been computed. If the average deviation from the average influence was more than one standard deviation above the mean of this distribution, the county was considered to have been particularly unstable with regard to the influence of the age-structure factor. If the average deviation was more than one standard deviation below the mean, the county was classified as having been particularly stable with regard to the same influence. The following counties have been identified:

a

In computing the average deviation, the signs of the deviations have not been considered.

Particularly unstableParticularly stable

Abitibi (no.1)

Argenteuil (no.2)

Arthabaska (3)

Beauce (5)

Beauharnois (6)

Chicoutimi (16)

Dorchester (19)

Frontenac (21)

Iberville (28)

Joliette (29)

Labelle (31)

L'Islet (37)

Matane, Matapedia (40-41)

Megantic (42)

Missisquoi (43)

Nicolet (51)

Papineau (52)

Quebec (55)

Richelieu (56)

Shefford (61)

Stanstead (64)

St Hyacinthe (65)

St Jean (66)

St Maurice (67)

Yamaska (75)

It is to be noted that the counties, in which the influence of the age-structure factor has been particularly variable, are also located in the southern part of the province, around the county of Montreal, (Appendix A).

It is interesting to note that the counties of Beauharnois, Missisquoi, St Hyacinthe and St Jean, which were considered as having been particularly affected by a negative influence of the age-structure factor, are also classified among those in which this influence has been particularly variable from one census to another. The counties of Quebec and Stanstead, which also were considered as having been particularly affected by a negative influence of the age-structure factor, have been classified among those in which this influence has been particularly stable from one census to another. Finally, the county of Frontenac has been particularly affected by a positive influence of the age-structure factor. has been stable during the whole period. This suggests that there is a negative relationship between the influence of the age-structure factor and the stability of this influence.

Comparison with the findings of chapter II regarding the identification of counties.

In chapter II, some counties have been identified as having maintained a particularly high or low observed

attendance rate and also as having been particularly stable or unstable in this rate, during the period under study.

In the present chapter, some counties have also been identified with regard to the negative or positive influence of the age-structure factor and the stability or instability of this influence in time.

By comparing these different lists of counties, it is found that, out of the nine counties which were classified in chapter II as having maintained a high average rate, only four reappear in the classifications of the present chapter, and they are counties in which the influence of the age-structure factor has been particularly stable. They had been previously classified also among the counties whose attendance rate was particularly stable.

Out of the ten counties classified as having maintained a low attendance rate, three reappear in the classifications of the counties with respect to the influence of the age-structure factor. Two of them are among the counties in which the influence of the age-structure factor has been particularly stable. The other, on the contrary, is among those in which the influence of the age-structure factor has been particularly variable.

There is not much that can be said from this comparison except perhaps that the counties which maintained a relatively high and stable attendance rate would be more

likely those who have maintained a more constant age-structure.

The Influence of Factors Other Than Age-Structure (Socio-Economic Factors)

The preceding part of the present chapter has been concerned with the influence of the age-structure of the school-age population on school attendance rates. This factor is not however the only one having an influence on school attendance. In order to get a more precise knowledge about this influence it has been felt that a study of the influence of all the other factors as a group was necessary.

Statistical analysis of the differences in attendance rates caused by socio-economic factors.

Tables XXVI, XXVII and XXVIII present the results of the statistical analysis of the differences in attendance rates caused by the socio-economic factors. The first one shows the characteristics of the distributions of differences when there is no sex differentiation, while the second and the third show the characteristics of the distributions of differences for males and females respectively. In order to observe more easily the similarities and differences between sexes, the three tables will be discussed simultaneously.

The median, as it can be seen from these tables has

TABLE XXVI

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE COUNTIES'
STANDARDIZED RATES FOR MALES AND
FEMALES COMBINED (INFLUENCE OF
SOCIO-ECONOMIC FACTORS)

Measures	1901	1931	1941	1951
Median	-10.10	-1.60	-2.10	-0.20
Q	3.50	2.00	2.00	1.90
Skewness	-0.129	-1.095	-0.570	-0.384
Kurtosis	-0.709	-3.009	-0.546	-0.289

TABLE XXVII

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE COUNTIES'
STANDARDIZED RATES FOR MALES (INFLUENCE
OF SOCIO-ECONOMIC FACTORS)

Measures	1901	1931	1941	1951
Median	-11.70	-3.00	-2.90	-0.70
Q	3.80	2.30	2.20	1.90
Skewness	-0.251	-0.720	-0.142	-0.035
Kurtosis	-0.746	+1.623	+1.274	+0.369

TABLE XXVIII

ANALYSIS OF THE DISTRIBUTIONS OF DIFFERENCES BETWEEN
THE COUNTIES' OBSERVED RATES AND THE COUNTIES'
STANDARDIZED RATES FOR FEMALES (INFLUENCE
OF SOCIO-ECONOMIC FACTORS)

Measures	1901	1931	1941	1951
Median	-8.30	-0.60	-1.20	+0.20
Q	3.30	2.00	1.70	2.00
Skewness	-0.489	-1.030	-1.015	-0.486
Kurtosis	-0.600	+3.854	+4.020	-0.312

always been negative. In interpreting this fact it is important to remember that the influence of the socio-economic factors has been evaluated from the differences between observed rates and standardized rates. The standardized rates have been computed on the basis of the 1951 provincial specific rates while the actual figures have been used in the computation of the observed rates. Referring to Table II, (chapter II, page 20), it could be seen that the median of the observed rates was 40.00 in 1901, compared with 49.10 in 1951. It is not surprising then that the median of the distributions of differences in attendance rates caused by socio-economic factors be negative. The opposite would have happened had the base year been 1901.

This does not explain however why the median was still negative in 1951, the base year. The explanation offered for the positive median of the distributions of differences in attendance rates caused by the age-structure factor was that the most populous counties (urban) have an age-structure which does not result in attendance rates as high as for the province as a whole and that the majority of the counties (rural) have on the contrary an age-structure which does result in attendance rates higher than for the province. The fact then that each county is counted for one regardless of its population explain why the median of the differences in

attendance rates caused by age-structure is positive.

Following the same line of thought it would seem that in the case of the influence of the socio-economic factors, the urban counties would be affected positively by these factors while the rural counties would be affected negatively.

Considering the quartile deviation, the trend seems to have been toward lesser dispersion, at least for the males and the males and females combined. For the females, there has been a decrease in dispersion between 1901 and 1941, but an increase thereafter. It is interesting to note that this decrease in the dispersion of the differences in attendance rates caused by socio-economic factors has been accompanied by an increase in the dispersion of the differences caused by the age-structure factor, (Tables XIV, XV and XVI pp. 67-69). The decreasing dispersion would mean that out of the two proposed interpretations for the greatest relationship in 1951 between the influence of the age-structure factor and the resulting influence of all the factors, the second is the right one. This interpretation was that the influence of the age-structure factor is more closely related to the resulting total influence because of a greater uniformity in the attitude of the people toward schooling (influence of socio-economic factors).

The distributions of differences in attendance rates

caused by socio-economic factors have always been negatively skewed indicating that there were more cases above the mean than below the mean. The trend is however toward normality since 1931. Considering the sexes individually it appears that the distributions of differences for males have always been less negatively skewed than the distributions of differences for the females. This would indicate that a larger number of counties maintained a better than average attitude toward schooling for females.

The analysis of kurtosis does not provide very valuable information. For the males, there has been since 1931 a slight trend from leptokurtic toward normality. In the case of the females, the trend has been from platykurtic to leptokurtic between 1901 and 1941. In 1951, however, the distribution was platykurtic.

Correlations.

A number of coefficients of correlation have been computed with regard to the influence of the socio-economic factors on school attendance rates. The purposes were: to discover if any change occurred from time to time in the relative order of the counties based on the relative influence of the socio-economic factors; to find out if this influence has been the same on the males rates and the females rates for the same counties at the same time; to

evaluate the relationship between the influence of the socio-economic factors and the resulting total influence of all the factors; and to evaluate also the relationship between the influence of the socio-economic factors and the influence of the age-structure factor.

Between censuses. Tables XXIX, XXX and XXXI present the correlations between censuses for males and females combined, males only and females only. By comparison with Tables XVII, XVIII and XIX pp. 75-77, which were concerned with the influence of the age-structure factor, it appears that the relative order of the counties has been more stable with regard to the influence of socio-economic factors than with regard to the influence of the age-structure factor. This observation suggests that for the same counties the age-structure factor has varied more from one census to another than did the attitude toward schooling (socio-economic factors). Comparing males and females, it is found that the influence of the age-structure factor, which was more stable for females than for males (Tables XVIII and XIX pp. 76 and 77), is counterbalanced by more instability with regard to the influence of socio-economic factors on school attendance rates for females, (Tables XXX and XXXI). Such an observation seems to be contrary to what has been found previously in the statistical analysis. The point is, that the attitude of the

TABLE XXIX

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE
DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE
COUNTIES' STANDARDIZED RATES
FOR MALES AND FEMALES
COMBINED (INFLUENCE
OF SOCIO-ECONOMIC
FACTORS)

Socio-economic factors			
Socio-economic factors	1931	1941	1951
1901	.68	.57	.33
1931		.86	.54
1941			.65

TABLE XXX

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE
DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE
COUNTIES' STANDARDIZED RATES
FOR MALES (INFLUENCE OF
SOCIO-ECONOMIC FACTORS)

socio-economic factors	Socio-economic factors		
	1931	1941	1951
1901	.65	.55	.38
1931		.85	.61
1941			.76

TABLE XXXI

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE
DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE
COUNTIES' STANDARDIZED RATES
FOR FEMALES (INFLUENCE OF
SOCIO-ECONOMIC FACTORS)

Socio-economic factors	Socio-economic factors		
	1931	1941	1951
1901	.61	.52	.29
1931		.80	.49
1941			.59

counties has been more uniform for females than for males, but that the relative order of the counties in that respect has been more variable in the case of the females. The tendency toward uniformity of attitude has been accompanied by a higher degree of variability in this attitude within individual county from one census to another. In the case of the males, this tendency toward uniformity of attitude is not so strong and the relative order of the counties has been more stable.

For both, males and females, it seems that a greater variability happened after 1931 since the correlation was .65 for males and .61 for females between 1901 and 1931, a thirty year period, to become .61 and .49 between 1931 and 1951, a twenty year period. More specifically the greatest variability took place after 1941, the correlations between 1931 and 1941 having been .85 and .80 for males and females respectively compared with .76 and .59 between 1941 and 1951.

Between sexes. The correlations between sexes with regard to the influence of socio-economic factors are presented in Tables XXXII, XXXIII and XXXIV. The first table deals with correlations between males and males and females combined; the second with females, and males and females combined; and the third with males and females.

From these tables, it can be observed that, for the

same year, the influence of the socio-economic factors on school attendance rates for males or females correlates rather high with the influence of the same factors on school attendance rates for males and females combined (Tables XXXII and XXXIII), more so than in the case of the age-structure factor, (Tables XX and XXI pages 80 and 81).

Table XXXIV shows the correlations between the influence of socio-economic factors on school attendance for males and for females. The coefficient of correlation which was rather high (.93) in 1901, indicating an almost identical attitude toward schooling for boys and for girls, dropped to .74 in 1931, then went up to .83 in 1941 to become .79 in 1951. It is impossible in such a case to indicate any trend but it can at least be said that at no time the correlation has been as high as in 1901. There has been since that time a certain difference between the attitude toward schooling for boys and for girls. This greatest relationship in 1901 could probably be explained by the fact that at that time the general level of education was rather low and that both boys and girls were withdrawn from school at about the same age. The shorter the schooling the less possibility there is for differences in attitude toward it.

Between the influence of the socio-economic factors
and the resulting influence of all the factors. Tables XXXV,

TABLE XXXII

CORRELATIONS BETWEEN MALES AND BOTH SEXES COMBINED
WITH REGARD TO THE DISTRIBUTIONS OF DIFFERENCES
BETWEEN THE COUNTIES' OBSERVED RATES AND THE
COUNTIES' STANDARDIZED RATES (INFLUENCE
OF SOCIO-ECONOMIC FACTORS)

Socio-economic factors (M)	Socio-economic factors (M+F)			
	1901	1931	1941	1951
1901	.98			
1931		.95		
1941			.96	
1951				.94

TABLE XXXIII

CORRELATIONS BETWEEN FEMALES AND BOTH SEXES COMBINED
WITH REGARD TO THE DISTRIBUTIONS OF DIFFERENCES
BETWEEN THE COUNTIES' OBSERVED RATES AND THE
COUNTIES' STANDARDIZED RATES (INFLUENCE
OF SOCIO-ECONOMIC FACTORS)

Socio-economic factors (F)	Socio-economic factors (M+F)			
	1901	1931	1941	1951
1901	.96			
1931		.90		
1941			.94	
1951				.91

TABLE XXXIV

CORRELATIONS BETWEEN MALES AND FEMALES WITH REGARD TO
THE DISTRIBUTIONS OF DIFFERENCES BETWEEN THE
COUNTIES' OBSERVED RATES AND THE COUNTIES'
STANDARDIZED RATES (INFLUENCE OF
SOCIO-ECONOMIC FACTORS)

Socio-economic factors (F)	Socio-economic factors (M)			
	1901	1931	1941	1951
1901	.93			
1931		.74		
1941			.83	
1951				.79

XXXVI and XXXVII show the correlations computed between the influence of the socio-economic factors and the resulting total influence. The first is concerned with these influences on the total attendance, the second deals with these influences on male attendance and the third with the same influences on female attendance. The three tables show a definite trend toward a smaller degree of relationship between the two variables at the same time. This contrasts with what has been found previously regarding the association of the influence of the age-structure factor with the resulting total influence of all the factors. In the case of the age-structure factor, the trend was toward a closer relationship (Tables XXIII, XXIV and XXV pp. 85-87), while the trend is in the opposite direction in the case of the socio-economic factors. This trend is greater in the case of the females since the coefficient of correlation which was .92 in 1901, dropped to .68 in 1951 compared with .97 and .80 for the males. One implication is that the influence of factors other than age-structure, which was, in 1901, a good predictor of the total influence, is in the process of becoming much weaker in that sense. The total influence of all the factors being the difference between the observed rates and the standard rate, which is constant, any correlation with the total influence of all the factors is

TABLE XXXV

CORRELATIONS BETWEEN THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS AND THE RESULTING TOTAL INFLUENCE OF ALL
FACTORS ON THE COUNTIES' ATTENDANCE RATES
FOR MALES AND FEMALES COMBINED

Socio-economic factors	All factors			
	1901	1931	1941	1951
1901	.93			
1931		.77		
1941			.80	
1951				.75

TABLE XXXVI

CORRELATIONS BETWEEN THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS AND THE RESULTING TOTAL INFLUENCE
OF ALL THE FACTORS ON THE COUNTIES'
ATTENDANCE RATES FOR MALES

Socio-economic factors	All factors			
	1901	1931	1941	1951
1901	.97			
1931		.92		
1941			.90	
1951				.80

TABLE XXXVII

CORRELATIONS BETWEEN THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS AND THE RESULTING TOTAL INFLUENCE
OF ALL THE FACTORS ON THE COUNTIES'
ATTENDANCE RATES FOR FEMALES

Socio-economic factors	All factors			
	1901	1931	1941	1951
1901	.92			
1931		.83		
1941			.69	
1951				.68

nothing more than a correlation with the observed rates. From this, it could then be said that a high or low attendance rate in 1951 was less associated with a large or small influence of socio-economic factors or in other terms a high or low attitude toward schooling than it was in 1901. The influence of the age-structure factor, on the other hand, has progressed in the opposite direction by becoming more closely associated with the size of the observed rates.

Between the influence of the age-structure factor and the influence of the socio-economic factors. The coefficients of correlation between the influence of the age-structure factor and the influence of the socio-economic factors are presented in Tables XXXVIII, XXXIX and XL. The first observation is that the two variables correlate negatively, indicating a tendency to cancel one another. Where the influence of the age-structure factor is such that a high attendance rate can be expected, the influence of socio-economic factors tends to lower this rate and vice versa. This could have something to do with the size of the families. It could be assumed for instance that generally speaking an age-structure of the school-age population which compares positively with the standard age-structure (province, 1951) would be associated with larger families. On the other hand, larger families mean heavier financial burden for the parents,

TABLE XXXVIII

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
 FACTOR AND THE INFLUENCE OF THE SOCIO-ECONOMIC
 FACTORS ON THE COUNTIES' ATTENDANCE RATES
 FOR MALES AND FEMALES COMBINED

Socio-economic factors	Age-structure factor			
	1901	1931	1941	1951
1901	-.001			
1931		-.29		
1941			-.50	
1951				-.21

TABLE XXXIX

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
 FACTOR AND THE INFLUENCE OF THE SOCIO-ECONOMIC
 FACTORS ON THE COUNTIES' ATTENDANCE
 RATES FOR MALES

Socio-economic factors	Age-structure factor			
	1901	1931	1941	1951
1901	.17			
1931		-.06		
1941			-.42	
1951				-.15

TABLE XL

CORRELATIONS BETWEEN THE INFLUENCE OF THE AGE-STRUCTURE
 FACTOR AND THE INFLUENCE OF THE SOCIO-ECONOMIC
 FACTORS ON THE COUNTIES' ATTENDANCE
 RATES FOR FEMALES

Socio-economic factors	Age-structure factor			
	1901	1931	1941	1951
1901	.11			
1931		-.19		
1941			-.41	
1951				-.19

which burden could affect negatively their attitude toward schooling. This possibility could be checked partially in the next chapter, the concern of which will be the relationship between school attendance and the relative size of the employable population.

By comparing Tables XXXIX and XL, it can be seen that the opposing effect of the two factors (age-structure and attitude toward schooling) is more noticeable in the case of the females. For example, in 1931, the coefficient of correlation for females was $-.19$ compared with $-.06$ for the males and in 1951 it was $-.19$ for the females compared with $-.15$ for males. The difference is not very significant in this last case, but indicates at least that the previous pattern had persisted. In 1901, both correlations (for males and for females) were positive, but the correlation for males was superior to that for females, indicating that the trend has been from a low positive correlation to a negative correlation, and that the females have been ahead of the males, in that respect (1941 excepted).

The average influence of the socio-economic factors during the fifty year period.

It is the purpose of this section to identify the counties whose school attendance rates have been particularly

affected by a high positive or negative influence of the socio-economic factors. The method used to get at this kind of information as been essentially the same as described earlier for the identification of counties having been particularly affected negatively or positively by the age-structure factor (pp. 90-91).

The following counties have been identified as having been particularly affected by:

A relatively high positive influence

A relatively high negative influence

Deux Montagnes (18)

Abitibi (no. 1)

Bonaventure (9)

Dorchester (19)

Frontenac (21)

Gaspe (22-23-24)

Hull (25-26)

Joliette (29)

Labelle (31)

Lac St Jean (32-33)

Levis (36)

Matane, Matapedia (40-41)

Montmagny (45)

Jesus, Montreal (48-49)

A relatively high positive
influence

Nicolet (no. 51)

A relatively high negative
influence

Papineau (52)

Pontiac (53)

Saguenay (60)

Sherbrooke (62)

St Jean (66)

St Maurice (67)

Temiscamingue (68)

Wolfe (74)

Yamaska (75)

It is to be noted that the counties, that have been affected by a high negative influence of the socio-economic factors are situated geographically at a certain distance from the most developed part of the province, (Appendix A). None of these counties are in the vicinity of Montreal. The principal occupations in these counties are: mining, lumbering, farming and fishing, and the minimum educational background required is rather low. A higher level of education would certainly improve the general situation, but this is probably not realized enough in these areas.

Variations in the influence of socio-economic factors from
time to time in individual counties.

In order to identify the counties whose school

attendance rates have been particularly affected by variations in the influence of the socio-economic factors, an average influence had been computed for each county, for the total period. To evaluate the variations, the average deviation to the average rate has also been computed. Following the method described earlier, some counties have been identified as having been particularly unstable or particularly stable with respect to the influence of the socio-economic factors.

They are as follow:

Particularly stable

Brome (no. 10)

Deux Montagnes (18)

Frontenac (21)

Iberville (28)

L'Assomption (35)

Napierville (50)

Richelieu (56)

Particularly unstable

Chateauguay (15)

Chicoutimi (16)

Hull, Gatineau (25-26)

Lac St Jean (32-33)

Montmagny (45)

Papineau (52)

Pontiac (53)

Particularly stableParticularly unstable

Rouville (no. 59)

St Hyacinthe (65)

St Jean (66)

Temiscamingue (68)

Vercheres (73)

A comparison of the list of counties that have been particularly stable or unstable with regard to the influence of the socio-economic factors with the list of counties that have been affected by a high negative or positive influence of these factors is rather interesting. It is found for instance that the counties of Hull-Gatineau, Lac St Jean, Montmagny, Papineau, Pontiac and Temiscamingue, which have been affected by a relatively high negative influence of socio-economic factors, have also been particularly variable in that respect since 1901. The county of Frontenac which has been also affected by a negative influence of these factors has been particularly stable. Finally, the counties of Deux Montagnes and St Jean, which have been affected by a positive influence of these socio-economic factors, have also been stable during the period under study. It seems then that variability has been associated with the negative influence of these factors, and stability with their positive influence.

Comparison with the findings of chapter II regarding the identification of counties.

In chapter II, some counties had been identified as having maintained a particularly high or low average attendance rate during the whole period, and also as having been particularly stable or unstable in their rates. These lists of counties have been compared previously with the counties identified as having been particularly affected by a positive or negative influence of the age-structure factor and that had been particularly stable or unstable in that respect. This comparison had not been very fruitfull and it could not be otherwise since the correlation between the influence of the age-structure factor and the observed rates was rather low. The same comparison will now be established, but this time, with regard to the influence of the socio-economic factors.

The counties of Deux Montagnes, Joliette, Levis, Nicolet, St Maurice and Yamaska, which have had a particularly high average attendance rate have been also identified as having been affected by a particularly high positive influence of socio-economic factors. Inversely, the counties of Hull-Gatineau, Labelle, Montmagny, Pontiac and Saguenay, which have had a particularly low average attendance rate are among those whose attendance rates have been affected

by a negative influence of the socio-economic factors. There has then been a positive relationship between the influence of the socio-economic factors and the observed attendance rates.

Interplay of the Influence of the Age-Structure Factor And the Influence of the Socio-Economic Factors

The total resulting influence of all the factors having an impact on school attendance rates is, in the present setting, the difference between the observed rates and the standard rate. From all these factors, the age-structure factor has been isolated, and its influence has been compared with the influence of the remaining factors in terms of size, trends, relationship with the observed rates and so on. A low, but positive correlation has been found between the influence of the age-structure factor and the total influence, revealing that this specific factor has not much to do with the size of the observed rate. On the contrary, the correlation between the influence of the socio-economic factors and the total influence indicates that the actual size of the observed attendance rates is much dependent upon the influence of these factors. The negative correlation found between the influence of the age-structure factor and the influence of other factors suggests furthermore

that these two influences tend to cancel each other. In order to obtain a better picture of the interplay of the two influences, a segment of the distribution of counties has been taken apart, and the different influences have been studied more closely, considering their size and direction. Figure 4 illustrates the findings.

This figure presents quite a number of different situations. In the counties of L'Assomption (35) and Montmagny (45), the influence of the age-structure factor is such, that the expected or standardized rate is above the standard rate (the zero line), but the influence of the socio-economic factors is in the opposite direction and equal in size, so that the observed rate is equal to the standard rate. Other incidences of the opposition of the two influences are the counties of Matane-Matapedia (40-41), Megantic (42), Missisquoi (43), Jesus-Montreal (48-49), Napierville (50) and Pontiac (53). In these cases, the influences are in opposite direction, but not being of the same size, they do not cancel completely one another. In all cases but one, (Missisquoi 43), the influence of the age-structure factor was larger than the influence of socio-economic factors and in all cases but one, (Jesus-Montreal 48-49), this influence was positive.

In some cases the two influences are in the same

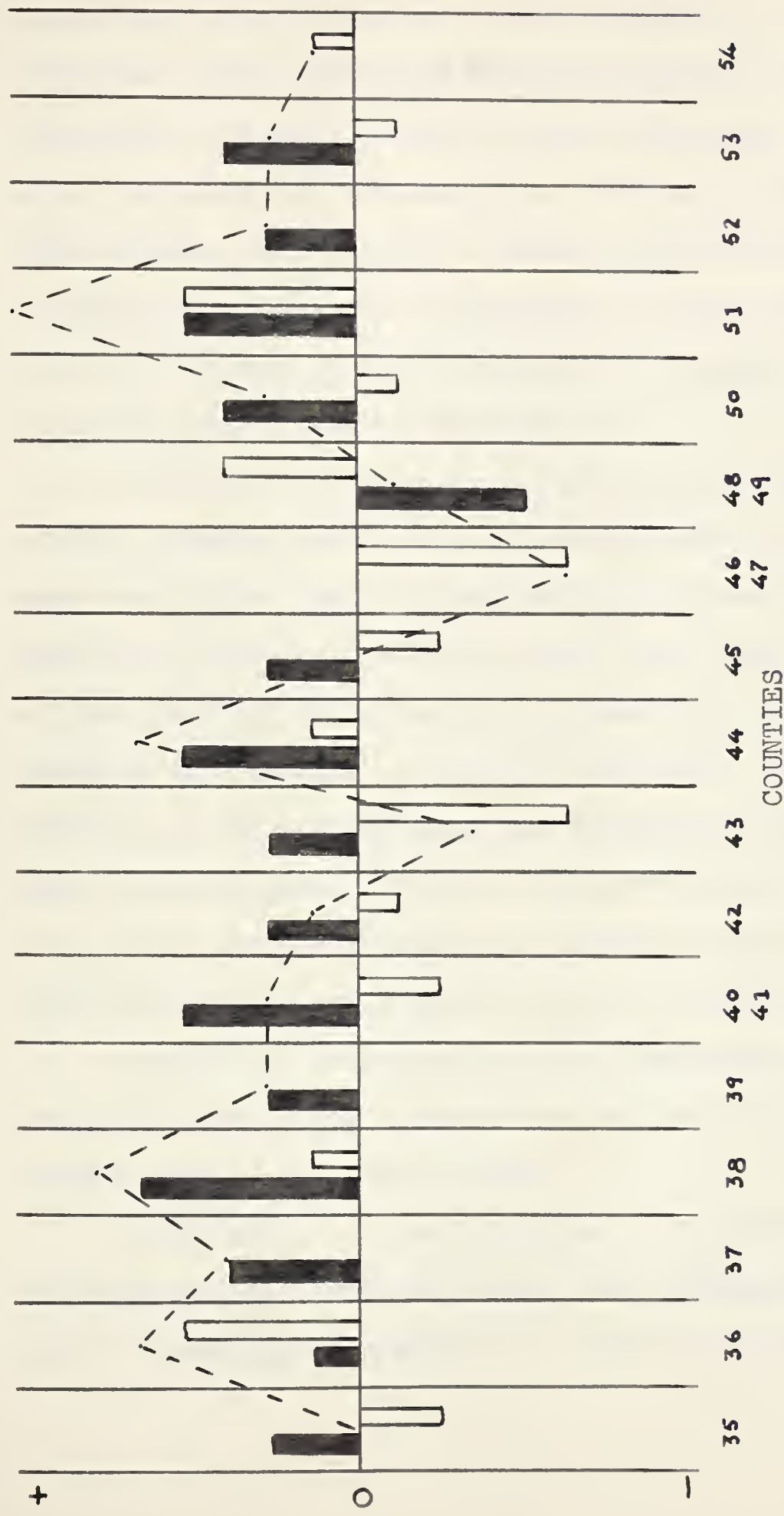


FIGURE 4

THE RELATIVE INFLUENCE OF THE AGE-STRUCTURE FACTOR AND SOCIO-ECONOMIC FACTORS
ON SCHOOL ATTENDANCE RATES OF A GROUP OF COUNTIES OF
THE PROVINCE OF QUEBEC IN 1951

■ = age-structure □ = socio-economic - - - = resulting influence

direction and add together. The counties of Levis (36), Lotbiniere (38), Montcalm (44) and Nicolet (51) are in this category. Finally, there are cases where one influence is nil, for instance, the counties of L'Islet (37), Maskinonge (39), Montmorency (46-47), Papineau (52) and Portneuf (54). In those cases the sole influence is either the age-structure factor influence or the influence of the other factors, and is either positive or negative.

Looking at Figure 4, a line passing by the extremity of the shadowed bars could be imagined which would indicate what would have been the deviations of these county' rates from the provincial rate (the zero line), had the attitude of the counties toward schooling been the same as in the province as a whole. A similar line could also be imagined passing by the extremity of the transparent bars which would indicate what would have been the deviations of these county' rates from the provincial rate, had their age-structure been identical to the age-structure of the province as a whole.

From this illustration, the inadequacy of the observed rates as a basis for judging the attitude of the counties toward schooling appears clear.

This study of the interplay of these influences does not however tell anything about the importance of one influence in relation to another in terms of the proportion of the

total influence caused by one or the other. It must be admitted that the previous description of the possible combinations of influences makes difficult such an evaluation, specially in the case of opposing influences. Considering however that in such a case the resulting influence has been caused by the interplay of two influences even if they cancel one another, and that the non-existence of any one of these two influences would have changed the resulting influence, one might be justified in ignoring for a moment the direction of the influences and add them in order to find a kind of total influence part of which has been caused by one influence and the remaining part by the other influence. For instance, an age-structure influence of +5 and an influence of socio-economic factors of +5 would give a total influence of 10, 50% of which has been caused by the age-structure influence and 50% by the influence of socio-economic factors. Likewise, an age-structure influence of -2 and an influence of socio-economic factors of +6 would indicate a total influence of 8, 25% of which has been caused by the age-structure influence and 75% by the influence of other factors. It must be noted that the term "total influence" used in the present discussion does not have the same meaning as the resulting total influence. The total influence here refers to the sum of two influences, regardless of their sign.

TABLE XLI

THE PROPORTION OF THE TOTAL RESULTING INFLUENCE CAUSED BY
 THE INFLUENCE OF THE AGE-STRUCTURE FACTOR AND THE
 INFLUENCE OF THE OTHER FACTORS IN THE CENSUS
 COUNTIES OF THE PROVINCE OF QUEBEC
 IN 1901, 1931, 1941 AND 1951

Census	Factor (s)	%	Corrected % ^a
1901	age-structure	22.2	52.9
	socio-economic	77.8	47.1
1931	age-structure	42.6	47.6
	socio-economic	57.4	52.4
1941	age-structure	38.2	48.5
	socio-economic	61.8	51.5
1951	age-structure	51.0	51.0
	socio-economic	49.0	49.0

^a

Corrected for the difference between the average observed rate in 1901, 1931 and 1941 and the same average in 1951.

Following the procedure just described, the proportion of the total influence caused by the age-structure factor has been found for each county, and an average has been computed. Table XLI shows the results. The percentages found by the already described method have been accompanied by what has been called corrected percentages. The basis for this correction has been that since the rate for the province as a whole in 1951 had been used as a point of reference in determining the influence of the factors on school attendance, the influence of socio-economic factors has been very large in 1901 compared with 1951; the average observed rate in 1901 was 39.5% compared with 49.10% in 1951. The selection of a standard population was necessary, as it has been discussed at the beginning of this chapter, to evaluate the influence of the age-structure factor, but being at this stage concerned with the proportion of the resulting influence caused by the age-structure factor at a given time, the influence of the other factors had to be corrected in some way. The method used has been to find the average influence of the age-structure factor and the average influence of the socio-economic factors at a given time regardless of the signs, then subtract from the average influence of socio-economic factors the difference between the average observed rate at this time and the average observed rate in 1951. It was

then a simple thing to find the proportion of the total influence caused by the age-structure factor and by the socio-economic factors at this given time.

Because of the possible imprecision of these computations, the corrected percentages cannot be considered as extremely accurate. They are however precise enough to conclude that about 50% of the resulting influence of all the factors has been in the past caused by the influence of the age-structure factor.

SUMMARY

This chapter is the major concern of the present study. The purpose was to find out to which extent the school attendance rates are affected by the age-structure of the school-age population. The influence of the age-structure factor has been isolated from the influence of all the factors by computing for each county and each census a standardized attendance rate based on the provincial attendance rate in 1951 for each one of the four groups of ages included in the so called school-age population (5-9, 10-14, 15-19 and 20 to 24 years of age). All through the study, the province as a whole in 1951 has been considered as a standard situation. For this reason, the provincial attendance rate in 1951 has been called the standard attendance rate. The differences between the counties observed

rates and standard rate have been said to be caused by the influence of all factors; the differences between the counties' standardized rates and the standard rate have been said to be caused by differences in the age-structure of the school-age population; and finally, differences between the counties' observed rates and the counties' standardized rates has been considered as being caused by all factors other than the age-structure of the school-age population. These other factors have been referred to as socio-economic factors.

The differences between rates described above have been computed for each county and each census. They have been arranged into distributions of differences. This has provided three distributions of differences per census. One indicating the influence of all the factors, one indicating the influence of the age-structure of the school-age population and the last one, the influence of the socio-economic factors. Moreover, the same computations have been made for males and females individually.

All distributions of differences have been analysed and intercorrelated. The findings could be summarized briefly as follows.

1. The school attendance rates as observed cannot be used to judge the attitude of individual counties toward schooling because large differences between

observed rates may be caused simply by differences in the age-structure of the school-age population.

2. The influence of socio-economic factors on school attendance which has been identified as the attitude toward schooling, is tending to become more uniform throughout the province.
3. School attendance rates for males are more seriously affected by socio-economic factors than school attendance rates for females.
4. There is a negative relationship between the influence of the age-structure factor and the influence of socio-economic factors on school attendance rates. This indicates that were the age-structure of the school-age population would tend to result in larger relative school population, the attitude toward schooling tends to restrain schooling. This negative relationship however is tending to disappear.
5. Considering each county individually, it seems that, generally speaking, the age-structure of the school-age population has as much influence on attendance rates as the socio-economic factors.

CHAPTER IV

RELATIONSHIP BETWEEN THE SCHOOL ATTENDANCE RATES AND THE EMPLOYABLE POPULATION

The preceding chapter was concerned with the influence of the age-structure of the school-age population and the influence of the so called socio-economic factors on school attendance rates. The present chapter deals with the relationship between the employable population and the school attendance rates. The basic hypothesis is that the size of the employable population determines, to a certain extent, the attitude toward schooling. A relatively large employable population would, for instance, tend to result in longer schooling and vice versa. Lorimer was thinking along the same lines when he wrote that in the Soviet Union in the early forties:

. . . , the promotion of education was facilitated by a lowered ratio of children to persons capable of providing instruction.¹

The major problem in studying the relationship between the employable population and the school attendance rates was to find a suitable index for the employable population.

¹Frank Lorimer, Dynamic Aspects of the Relation of Population to Economic Development in Demographic Analysis, Selected Readings by Joseph J. Spengler and Otis Dudley, (Illinois: The Free Press, 1956), page 455.

The present study being concerned with education and more specifically the number of people to be educated, this index must refer in the present context to the size of the employable population in relation to the size of the population to be educated. It remains however to decide what the population to be educated is. It could be the school population as observed (actual school population), it could be the total school-age population (all children 5 and 24 years of age), or it could be the expected school population (as described page 55).

If it is assumed that the size of the school population varies with the size of the employable population, it appears that the school population itself could not be used for the purpose of determining the index for the employable population. If the size of the school population really varies with the variations in the size of the employable population, the ratio between these two populations will tend to remain constant and no information about the variations in the size of the employable population will be obtained.

The total school-age population does not present this disadvantage but in order to use it, the assumption would have to be made that everybody between five and twenty-four years of age could be expected to attend school. Such an assumption is really too unrealistic. Furthermore, as has been proved in chapter III, it cannot be assumed that for all

the counties the same proportion of the school-age population can be expected to attend school. Some groups of ages are likely to attend school in a greater proportion than other groups of ages so that variations in the population of each group of ages may cause great variations in the proportion of the total school-age population attending school.

The expected school population has neither of these disadvantages. It is not affected by the size of the employable population since it is computed on the basis of the specific provincial rates of 1951. Moreover, the mode of computation of the expected school population takes into consideration the differences in age-structure of the school-age population of the different counties. It seems then that the most accurate index of the employable population is a ratio between the expected school population and the employable population. This index may be looked upon as a measure of the relative size of the employable population.

For each county and each census such a ratio has been computed. This has provided four distributions of ratios, one for each census. These distributions have been analysed in order to find their characteristics and possibly some trends from one census to another. Intercorrelations between the same distributions of ratios have also been computed for the purpose of discovering if the relative size of the employable population of the counties remained about the same all through

the years. The impact of the relative size of the employable population on the school attendance rates has been determined by correlating the relative size of the employable population of the counties with the influence of the socio-economic factors on their respective attendance rates. The latter was calculated in chapter III. The relative size of the employable population does not affect directly the school attendance rates but rather the socio-economic conditions which in turn enhance or discourage schooling.

Statistical analysis of the distributions of the counties' ratios of expected school population to employable population.

The distributions of the counties' ratios of expected school population to employable population have been analysed and the results of this analysis are presented in Table XLII in terms of median, quartile deviation, skewness and kurtosis. To simplify the interpretation, the ratios have been multiplied by 100 so that instead of saying there were in County X .4920 children expected to be in school per employable people it will be said that in this county there were 49.20 children expected to be in school per 100 employable people.

As it is shown in Table XLII, the median of the distributions of ratios has decreased regularly since 1901, indicating that the relative size of the employable population has a tendency to increase. The employable population

TABLE XLII

ANALYSIS OF THE DISTRIBUTIONS OF THE COUNTIES' RATIOS OF
EXPECTED SCHOOL POPULATION TO EMPLOYABLE POPULATION

Measures	1901	1931	1941	1951
Median	51.70	49.70	43.90	41.40
Q	2.90	6.00	6.70	4.90
Skewness	-.514	-.071	.012	.055
Kurtosis	+1.946	-.708	-.706	-.415

The ratio for the province as a whole in 1951 was 34.2.

being the denominator of the ratio, the larger the employable population the smaller the ratio. Considering that the ratio for the province as a whole in 1951 was 34.20 it would seem from the median found that the majority of the counties always had a relative employable population smaller than for the province as a whole. It is obvious that differences in the size of the families between urban and rural counties and the constant shift of employable population from rural areas to urban centers have affected these ratios. The interest here is however to realize that in the majority of counties, the relative size of the employable population is smaller than for the province as a whole.

The quartile deviation indicates the discrepancies between counties with regard to the relative size of the employable population. It was only 2.90 in 1901 but became 6.00 in 1931. It still increased between 1931 and 1941 but decreased markedly between 1941 and 1951. There would then be a tendency since 1941 toward a greater homogeneity among counties insofar as the relative size of the employable population is concerned.

The measure of skewness indicates a trend from negative skewness to positive skewness. This suggests that in 1901, there were very few counties having a relatively large employable population but that since then more counties tend to move in that direction.

Insofar as kurtosis is concerned, the trend between 1901 and 1931 has been from leptokurtic to platykurtic but since 1931 it is more toward normality.

Correlations.

Coefficients of correlation have been computed in order to see if changes occurred from time to time in the relative order of the counties with respect to the relative size of the employable population. They have served also to indicate the relationship between the relative size of the employable population and the influence of the socio-economic factors on school attendance rates. The influence of the socio-economic factors on the attendance rates has been used rather than the rates themselves because the relative size of the employable population has no direct effect on school attendance rates but rather changes the socio-economic conditions which in turn affect school attendance.

Between censuses. Table XLIII presents the coefficients of correlation found between the relative size of the employable population of the counties at different census periods. From these correlations, it can be seen that there has been no great change in the relative order of the counties with respect to the relative size of the employable population. This suggests that any event, which affected this segment of the population in one way or another, affected all the

TABLE XLIII

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE RELATIVE
SIZE OF THE EMPLOYABLE POPULATION OF THE
COUNTIES

	1931	1941	1951
1901	.76	.74	.69
1931		.94	.90
1941			.93

counties to about the same extent. Even between 1901 and 1951, the coefficient of correlation was as high as .69 (a fifty year period). It was .76 between 1901 and 1931, and .90 between 1931 and 1951. Even considering the difference in the length of the two periods, it seems that a greater change occurred between 1901 and 1931.

Between the relative size of the employable population and the influence of the socio-economic factors on the school attendance rates. It is believed that the relative size of the employable population has an impact on the prevailing socio-economic conditions of an area. Other things being equal, it seems logical to think that in a given area with five dependent people for each worker, each one will receive less of everything than if there were only three dependents per worker. The influence of the socio-economic factors on school attendance rates has already been evaluated in the preceding chapter. The impact of the relative size of the employable population on school attendance rates could then be estimated by correlating the influence of the socio-economic factors on school attendance rates with the relative size of the employable population. The coefficients of correlation found between these two variables are presented in Tables XLIV, XLV and XLVI. The first table is concerned with the combined rates for males and females while the

TABLE XLIV

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE EMPLOYABLE
POPULATION AND THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS ON THE COUNTIES' ATTENDANCE RATES
FOR MALES AND FEMALES COMBINED

X ¹	Relative size of employable population			
	1901	1931	1941	1951
1901	-.72			
1931		-.55		
1941			-.61	
1951				-.38

¹
Influence of socio-economic factors on attendance
rates for males and females combined.

TABLE XLV

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE EMPLOYABLE
POPULATION AND THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS ON THE COUNTIES' ATTENDANCE
RATES FOR MALES

X ¹	Relative size of employable population			
	1901	1931	1941	1951
1901	-.45			
1931		-.48		
1941			-.58	
1951				-.45

¹
Influence of socio-economic factors on attendance
rates for males.

TABLE XLVI

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE EMPLOYABLE
POPULATION AND THE INFLUENCE OF THE SOCIO-ECONOMIC
FACTORS ON THE COUNTIES' ATTENDANCE
RATES FOR FEMALES

x ¹	Relative size of employable population			
	1901	1931	1941	1951
1901	-.38			
1931		-.37		
1941			-.55	
1951				-.27

¹
Influence of socio-economic factors on attendance
rates for females.

second and the third deal with rates for males and rates for females respectively.

From Table XLIV, it can easily be observed that the relationship has decreased since 1901, the 1941 case excepted. This would indicate that the relative size of the employable population, which was determining factor in the attitude toward schooling in 1901, has been less and less influential since then. The coefficient of correlation was $-.72$ in 1901, and only $-.38$ in 1951. The negative relationship might need comment here. It has already been stated that a larger relative employable population reduces the ratio of school population to employable population while a larger relative school population increases the school attendance rate. Knowing this, the interpretation of the negative correlation is that a larger relative school population is associated with a larger employable population.

A comparison of Tables XLV and XLVI, reveals that the relative size of the employable population has generally been more influential on the attitude toward schooling for boys than schooling for girls. It would seem then that boys are more likely to be withdrawn earlier from school where the employable population is relatively smaller. The reason might be that there are generally more opportunities for boys to find jobs which do not require high academic background.

SUMMARY

This chapter was concerned with the relationship between the school attendance rates and the employable population. The ratio of the expected school population to the employable population has been selected as the most suitable index for the employable population. Such a ratio has been calculated for each county and each census. This has provided four distributions of ratios, one for each census. These distributions have been analysed and the following points have been found:

1. There is a definite trend from one census to another toward a larger relative employable population in the counties.
2. The majority of the counties always had a relative employable population smaller than for the province as a whole. These counties are mostly rural.
3. There seems to be a tendency since 1941 toward a greater uniformity between counties with regard to the relative size of the employable population.

The distributions of ratios between the expected school population and the relative employable population have also been intercorrelated and it has been observed that the relative order of the counties with respect to the relative

size of the employable population remained almost constant all through the years.

Finally, the relative size of the employable population has been correlated with the influence of socio-economic factors on school attendance rates. This has been done because it is believed that variations in the relative size of the employable population do not affect directly the school attendance rates but rather change the socio-economic conditions which in turn affect the rates. The study has revealed that:

1. The relationship between the relative size of the employable population and the influence of socio-economic factors on school attendance rates is such that a larger relative employable population is associated with higher attendance rates.
2. This relationship, however, has decreased gradually since 1901 (1941 excepted).
3. The relative size of the employable population has a greater impact on attendance rates for males than on attendance rates for females.

CHAPTER V

RELATIONSHIP BETWEEN THE SCHOOL ATTENDANCE RATES AND THE TOTAL POPULATION

The two preceding chapters dealt respectively with the influence of the age-structure of the school-age population on the school attendance rates and the relationship between the school attendance rates and the employable population. It has been felt that a study of the relationship between the school attendance rates and the total population could provide additional information about the factors having an impact on school attendance. This will be the purpose of the present chapter.

In studying the relationship between the school attendance rates and the total population, the problem arose of finding a suitable index for the total population. As it is recalled, a similar problem has been dealt with in chapter IV with regard to the index for the employable population (pp. 136-139). The index for the total population having to meet the same requirements as the index for the employable population it has been defined in the same terms. This index is then a ratio between the expected school population and the total population. It may be looked upon as a measure of the relative size of the total population.

For each county and each census such a ratio has been computed. This has provided four distributions of ratios, one for each census. These distributions have been analysed in order to find their characteristics and possibly some trends from one census to another. Intercorrelations between the same distributions of ratios have also been computed for the purpose of discovering if the relative size of the total population of the counties remained about the same all through the years. The impact of the relative size of the total population on the school attendance rates has been determined by correlating the relative size of the total population of the counties with the influence of the socio-economic factors on their respective attendance rates. The latter was calculated in chapter III. The relative size of the total population does not affect directly the school attendance rates but rather the socio-economic conditions, which in turn enhance or discourage schooling.

Statistical analysis of the distributions of the counties' ratios of expected school population to total population.

The distributions of the counties' ratios of expected school population to total population have been analysed and the results of this analysis are presented in Table XLVII in terms of median, quartile deviation, skewness and kurtosis. To simplify the interpretation, the ratios have been multiplied by 100, so that instead of saying there were in County X

TABLE XLVII

ANALYSIS OF THE DISTRIBUTIONS OF THE COUNTIES' RATIOS OF
EXPECTED SCHOOL POPULATION TO TOTAL POPULATION

Measures	1901	1931	1941	1951
Median	22.50	22.20	21.10	19.70
Q	0.70	1.40	1.60	1.40
Skewness	-.711	-.206	-.322	-.223
Kurtosis	+1.418	-.698	-.676	-.072

The ratio for the province as a whole in 1951 was 17.9.

. 1620 children expected to be in school per people in the total population, it will be said that in this county there were 16.20 children expected to be in school per person in the total population.

As it can be seen from Table XLVII, the median of the distributions of ratios has decreased regularly since 1901, indicating that the relative size of the total population has a tendency to increase. The total population being the denominator of the ratio, the larger the total population the smaller the ratio. Considering that the ratio for the province as a whole in 1951 was 17.9, it would seem from the median found that the majority of the counties always had a relative total population smaller than for the province as a whole. This has probably been caused by differences in the size of the families between urban and rural counties and the constant shift of adult population from rural areas to urban centers. It is however worthwhile to note that in the majority of counties, the relative size of the total population is smaller than for the province as a whole.

The quartile deviation indicates the discrepancies between counties with regard to the relative size of the total population. It was 0.70 in 1901 but became 1.40 in 1931. It still increased between 1931 and 1941 but decrease by the same amount between 1941 and 1951. It is almost impossible to draw any trend from this information. The only

thing that could be said is that the discrepancies between the counties with regard to the relative size of the total population remained about the same since 1931.

The measure of skewness indicates a trend between 1901 and 1931 toward normality. Since then however the situation remained almost the same with only small variations.

Insofar as kurtosis is concerned the general trend has been from leptokurtic to platykurtic between 1901 and 1931 and then toward normality.

Correlations.

Coefficients of correlation have been computed in order to see if changes occurred from time to time in the relative order of the counties with respect to the relative size of the total population. They have served also to indicate the relationship between the relative size of the total population and the influence of the socio-economic factors on school attendance rates. The influence of the socio-economic factors on the attendance rates has been used rather than the rates themselves because the relative size of the total population has no direct effect on school attendance rates but rather changes the socio-economic conditions which in turn affect school attendance.

Between censuses. The coefficients of correlation found between the relative size of the total population at different

census periods are presented in Table XLVIII. As it can be seen, there was a correlation of $-.65$ between 1901 and 1931 compared with $.86$ between 1931 and 1951. This means that greater changes in the relative order of the counties took place between 1901 and 1931. During the second period, that is from 1931 to 1951, the greatest change occurred after 1941 as shown by the coefficient of $.92$ between 1931 and 1941 compared to $.89$ between 1941 and 1951. The difference is rather small however.

Between the influence of socio-economic factors on school attendance rates and the relative size of the total population. Tables XLIX, L and LI present the coefficients of correlation found between the influence of the socio-economic factors on school attendance rates and the relative size of the total population. The first table is concerned with attendance rates for males and females combined, while the second and the third deal with attendance rates for males and for females respectively.

It can be observed from these tables that all coefficients of correlation are negative, indicating that high attendance rates are associated with large relative total populations and vice versa. With the exception of 1941, the coefficients of correlation are higher for males than for females. The situation in 1941 was probably due to the fact

TABLE XLVIII

CORRELATIONS BETWEEN CENSUSES WITH REGARD TO THE RELATIVE
SIZE OF THE TOTAL POPULATION OF THE COUNTIES

	1931	1941	1951
1901	.65	.65	.61
1931		.92	.86
1941			.89

TABLE XLIX

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE TOTAL
POPULATION AND THE INFLUENCE OF THE
SOCIO-ECONOMIC FACTORS ON THE
COUNTIES' ATTENDANCE RATES FOR
MALES AND FEMALES COMBINED

1 X	Relative total population			
	1901	1931	1941	1951
1901	-.50			
1931		-.47		
1941			-.57	
1951				-.35

1
Influence of socio-economic factors on school
attendance rates for males and for females combined.

TABLE L

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE TOTAL
POPULATION AND THE INFLUENCE OF THE
SOCIO-ECONOMIC FACTORS ON THE
COUNTIES' ATTENDANCE
RATES FOR MALES

X ¹	Relative total population			
	1901	1931	1941	1951
1901	-.52			
1931		-.48		
1941			-.52	
1951				-.40

¹ Influence of socio-economic factors on school
attendance rates for males.

TABLE LI

CORRELATIONS BETWEEN THE RELATIVE SIZE OF THE TOTAL
POPULATION AND THE INFLUENCE OF THE
SOCIO-ECONOMIC FACTORS ON THE
COUNTIES' ATTENDANCE
RATES FOR FEMALES

X ¹	Relative total population			
	1901	1931	1941	1951
1901	-.38			
1931		-.40		
1941			-.69	
1951				-.26

¹Influence of socio-economic factors on school
attendance rates for females.

that the boys more than the girls have been inclined to leave school earlier, because of the absence of a compulsory attendance law and because of the increased occupational opportunities. For both the males and the females, the coefficients of correlation were lower in 1951. Not considering the 1941 case, it would seem that there has been trend toward a decreasing relationship between the school attendance rates and the relative size of the total population. It is probable that the compulsory attendance law of 1942 contributed to the reduction of this relationship by forcing parents to keep their children in school up to the age of fourteen.

SUMMARY

The purpose of this chapter was to study the relationship between the school attendance rates and the total population. For reasons identical to those discussed in chapter IV, the index for the total population has been the ratio of the expected school population to the total population, such a ratio has been computed for each county and each census and they have been arranged into four distributions of ratios, one for each census. These distributions of ratios have been analysed and the following conclusions have been arrived at:

1. There is a trend from one census to another toward a larger relative total population in the counties.

2. The majority of the counties always had a relative total population smaller than for the province as a whole. These are rural counties.
3. The discrepancies between counties with regard to the relative size of the total population remained about the same since 1931.

After having been analysed the distributions of ratios have been intercorrelated. It has been found that the relative order of the counties with regard to the relative size of the total population has been slightly more variable than the relative order of the counties based on the relative size of the employable population.

Finally, the relative size of the total population has been correlated with the influence of socio-economic factors on school attendance rates. Here again, it was believed that such a factor affects indirectly the attendance rates, that is by modifying the socio-economic conditions. The findings are as follows:

1. The relationship between the relative size of the total population and the influence of socio-economic factors on school attendance rates is such that a larger relative total population is associated with higher attendance rates.
2. This relationship has decreased gradually since 1901 (1941 excepted).

3. The relative size of the total population has a greater impact on attendance rates for males than attendance rates for females.

CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS, FURTHER RESEARCH

SUMMARY

The study is concerned with the impact of demographic and socio-economic factors on school attendance rates in the Province of Quebec from 1901 to 1951. The socio-economic factors have been considered as a group of factors which contributes to create an attitude toward schooling. The demographic factors which have been studied were the age-structure of the school population, the relative size of the employable population and the relative size of the total population, the last two factors being suspected of having something to do with the attitude toward schooling. Sex, which is in fact a demographic factor, was not considered as such in this study, since no attempt has been made to evaluate the impact of differences in the sex composition of a population on school attendance. The only reason to consider the variable sex was to find out if there was any difference in the impact of the factors enumerated above, on school attendance rates for males and for females.

A study of the school attendance rates as such was the object of a special chapter. The purpose was to get acquainted with the characteristics and the evolution of these rates

before investigating the factors which might have affected them in some way. It has been found that even if the provincial rate remained about the same from 1921 to 1951, some interesting changes took place in the attendance rates of the counties. First of all, the dispersion of these rates decreased gradually from one census to another, indicating a trend toward greater uniformity. Secondly, the average attendance rate of these counties, insofar as each one of them is counted for one, regardless of its population, has increased gradually, suggesting that the general attitude toward schooling is becoming more and more favorable.

Correlations between censuses have demonstrated that the relative order of the counties, with respect to school attendance rates, has been rather variable during the whole period and that there has been neither a trend toward a stable ranking nor a trend to return to an original ranking. Taking each sex individually, it appears that the distributions of rates for males presented a greater dispersion than those for females up to 1951, at which time both were about the same. Correlations between school attendance rates for males and for females suggest that in 1901 there was a certain consistency between the attitude toward schooling for boys and for girls, even if the attendance rates for girls were lower. The correlation dropped markedly in 1931 and 1941 to

the point that only 23 to 24% of the variation in attendance rates for males was associated with similar variation in attendance rates for females. In 1951, the relationship between the two sets of rates increased, so that about 40% of the variation in attendance rates for males was associated with similar variation in attendance rates for females. It is not impossible that the compulsory attendance law, passed in the 40's increased this relationship by forcing people to keep their children in school up to the age fourteen. A study of the stability of the attendance rates for individual counties revealed that the counties, having high rates tended to be a little more stable in their rates than those having low rates. Taking each sex individually, this observation holds for the rates of females but not for the rates of males.

Following this study of the attendance rates as such, an investigation was made of the influence of demographic factors on these attendance rates. One of these factors, the age-structure of the school-age population, is particularly interesting because of its direct impact on school attendance. It has been demonstrated that the same school population cannot be expected from two school-age populations of the same size but with a different age-structure. In 1951, for example, a school attendance rate for males of 43% for one county might be as good as a rate of 54% in another county.

This underlines the fact that the attendance rates as observed cannot be compared from one county to another as a basis for judging the relative attitude toward schooling. The general trend seems to be toward greater differences in attendance rates caused by the age-structure of the school-age population. The correlation between the total resulting influence of all factors and the influence of the age-structure of the school-age population on attendance rates has been surprisingly low but shows a trend toward a greater relationship. In 1951, about 20% of the variation in the observed attendance rates was associated with similar variation in the influence of the age-structure factor on the same rates, compared with 7.8% in 1901. The influence of socio-economic factors on these rates has been a little larger and the relationship between this influence and the total resulting influence of all factors has been closer than for the influence of the age-structure factor. The trend however, seems to be toward a decreasing relationship. In 1951, 42% of the variation in the observed attendance rates was associated with variation in the influence of socio-economic factors, insofar as no sex differentiation is made. The school attendance rates for males are more seriously affected by variations in the influence of socio-economic factors than are school attendance rates for females. Correlating the influence of the age-structure factor and the influence of socio-economic factors

indicates that a negative relationship exists between the two variables. This would mean that when the age-structure of a school-age population is such that a higher relative school population is expected, the attitude toward schooling (the influence of socio-economic factors) tends to reduce this school population. This negative relationship has, however, always been rather small and except in the case of the females, the trend seems to be toward an even smaller relationship. This observation goes along with the previous observations that the impact of the age-structure of the school-age population on attendance rates is increasing and that the impact of the socio-economic factors on the same rates is decreasing. A more detailed study of the interplay of the age-structure factor and the socio-economic factors has revealed that in some cases, the two influences cancel one another, partially or completely; in other cases, they operate in the same direction, and consequently add together; finally there are cases in which only the age-structure factor or the socio-economic factors operate. Taking each county individually, it is found that generally speaking, about 50% of the total resulting influence of all factors is caused by the influence of the age-structure factor.

Another demographic factor, whose influence on school attendance rates has been investigated, is the relative size

of the employable population. It is understood that such a demographic factor does not have any direct influence on school attendance rates. Indirectly, however, it is believed that the size of the employable population has some kind of impact on school attendance. It is accepted that the relative size of an employable population, at a specific time, could be the result of prevailing socio-economic conditions, twenty, thirty, fifty and even sixty years before, but it is firmly believed that, at this specific time, the socio-economic conditions are accounted for, in part, by the relative size of the employable population. Correlating the influence of socio-economic factors on school attendance rates and the relative size of the employable population indicates that, in 1901, 51.8% of the variation in the influence of socio-economic factors on school attendance rates was associated with similar variation in the relative size of the employable population. In 1951 however, the proportion was only 14.4%, suggesting that the attitude toward schooling is less influenced by the relative size of the employable population. Considering the sexes individually, it is found that, in the case of the males, there has not been any significant change in this relationship since 1901 and it can be said that during the whole period, about 20% of the variation in the influence of socio-economic factors

on attendance rates for males has been associated with variation in the relative size of the employable population. In the case of the females, the relationship has been smaller in 1901 (14.4%) and moreover it decreased regularly since then (7.3%) in 1951. This would suggest that the attitude toward schooling for girls is becoming almost independent of the relative size of the employable population.

Finally, the influence of a third demographic factor on school attendance rates has been studied. This factor is the relative size of the total population or in other words the size of the total population in relation to the size of the school population as expected. This demographic factor, the relative size of the total population, does not have a direct influence on school attendance rates, but rather contributes to the attitude toward schooling by affecting the socio-economic conditions. Following this line of thought, correlations between the influence of socio-economic factors on school attendance rates and the relative size of the total population would more likely indicate what the impact of this factor on school attendance has been. It has been found that 25% of the variation in school attendance rates caused by socio-economic factors was, in 1901, associated with similar variation in the relative size of the total population. This percentage was 22.1% in 1931, and 32.5% in 1941. In 1951, it dropped to 12.2% indicating that the attitude toward schooling

was not, at that time, as much influenced by the relative size of the total population as formerly. Here again it is probable that the compulsory attendance law has had something to do with this decrease in relationship. Considering each sex individually, it appears that, with the exception of 1941 the relative size of the total population had a greater impact on school attendance rates for males than for females.

CONCLUSIONS

The following conclusions have been drawn from the findings of the study:

1. The average attendance rate for all the counties has not increased much since 1931, but the dispersion of the counties rates has tended to decrease indicating a trend toward uniformity.
2. Attendance rates for males have not been closely associated with attendance rates for females, but the tendency is toward a closer relationship. The school attendance rates for females remain lower, however, than for males.
3. Insofar as attendance rates for females are concerned there is a slight tendency for the highest rates to be more stable from one census to another. This is not the case for males rates.
4. The school attendance rates as observed cannot be

used to judge the attitude of individual counties toward schooling since large differences between observed rates can be caused simply by differences in the age-structure of the school-age population.

5. The influence of socio-economic factors on school attendance, which has been identified as the attitude toward schooling, is tending to become more uniform throughout the province.

6. School attendance rates for males are more seriously affected by socio-economic factors than are school attendance rates for females.

7. There is a negative relationship between the influence of the age-structure factor and the influence of socio-economic factors on school attendance rates. This indicates that where the age-structure of the school-age population would tend to result in a larger relative school population, the attitude toward schooling tends to restrain schooling. This negative relationship however is tending to disappear.

8. Considering each county individually it seems that, generally speaking, the age-structure of the school-age population has as much influence on the attendance rates as the socio-economic factors.

9. A relationship has been found between the attitude toward schooling and the relative size of the

employable population, indicating that a larger relative employable population would favor increased schooling. This relationship is decreasing however.

10. A similar relationship has been found between the attitude toward schooling and the relative size of the total population with a larger relative total population favoring more schooling.

11. In both cases, (9 and 10), the attendance rates for males are more affected by these demographic factors than are the attendance rates for females.

12. The decreasing relationship between attitude toward schooling and such demographic factors as the relative employable population and the relative total population go along with the tendency toward a more uniform attitude toward schooling mentioned earlier, (conclusion 5).

IMPLICATIONS

These findings have certainly a large number of implications for educational administration. No attempt will be made to give an exhaustive list of these implications but it has been felt that the most obvious should be mentioned.

1. It seems evident that global attendance rates as observed have very little meaning for the administrator. They are too heavily affected by the age-structure of the school-age population. Because this age-structure varies from one

area to another and, for the same area, from one time to another no comparison between such rates can be of any use. Observed global rates become meaningful only when they are compared to standardized rates. The administrator who does not want to make use of standardized rates should limit himself to specific attendance rates that are rates for given groups of ages within the school-age population.

2. A trend toward uniformity of attitude toward schooling has been noticed. Such a trend is probably the consequence of the combined influence of many factors. Among these factors could be mentioned the greater mobility of the population, the better means of communication, the increasing demand for skilled workers and so on. It appeared however from this study that the compulsory attendance law of 1942 has contributed to accelerate the trend toward uniformity of attitude with regard to schooling. This suggests that such a legal disposition might be one of the most expeditive means of highering the educational standards within a province. The same result could probably be obtained by way of educating the public or by leaving the public experience the need for higher education but this is a very slow process.

3. It has been observed that socio-economic factors have a greater impact on the school attendance for the males.

There are all kinds of factors under this label of socio-economic factors and unfortunately it was not the purpose of the present research to identify any one of them but this fact indicates a more pressing need for a compulsory attendance law for the males. It is however understood that the attendance rates for males might be less affected by socio-economic factors simply because a smaller proportion of the girls attend university no matter where they live.

4. The study of the relationship between school attendance and the relative size of the employable population and / or the total population has revealed that in many counties the relative size of the employable population and / or total population is much smaller than for the province as a whole. In these counties particularly it appears that forcing parents to keep their children in school up to a certain age by way of a compulsory attendance law might place upon them an unfair financial burden. This would suggest that a strict attendance law should be accompanied by some kind of financial assistance to the parents, not only in terms of free education for the children but also in terms of a monthly allowance or something of that nature.

FURTHER RESEARCH

It has been found indirectly that there is a close relationship between employable population and total

population, but not so much between school-age population and total population. This suggests that the present study could be supplemented by a study of the relationship between attendance rates and a ratio of the independent population (employable population) to the dependent population, (the total population less the employable population).

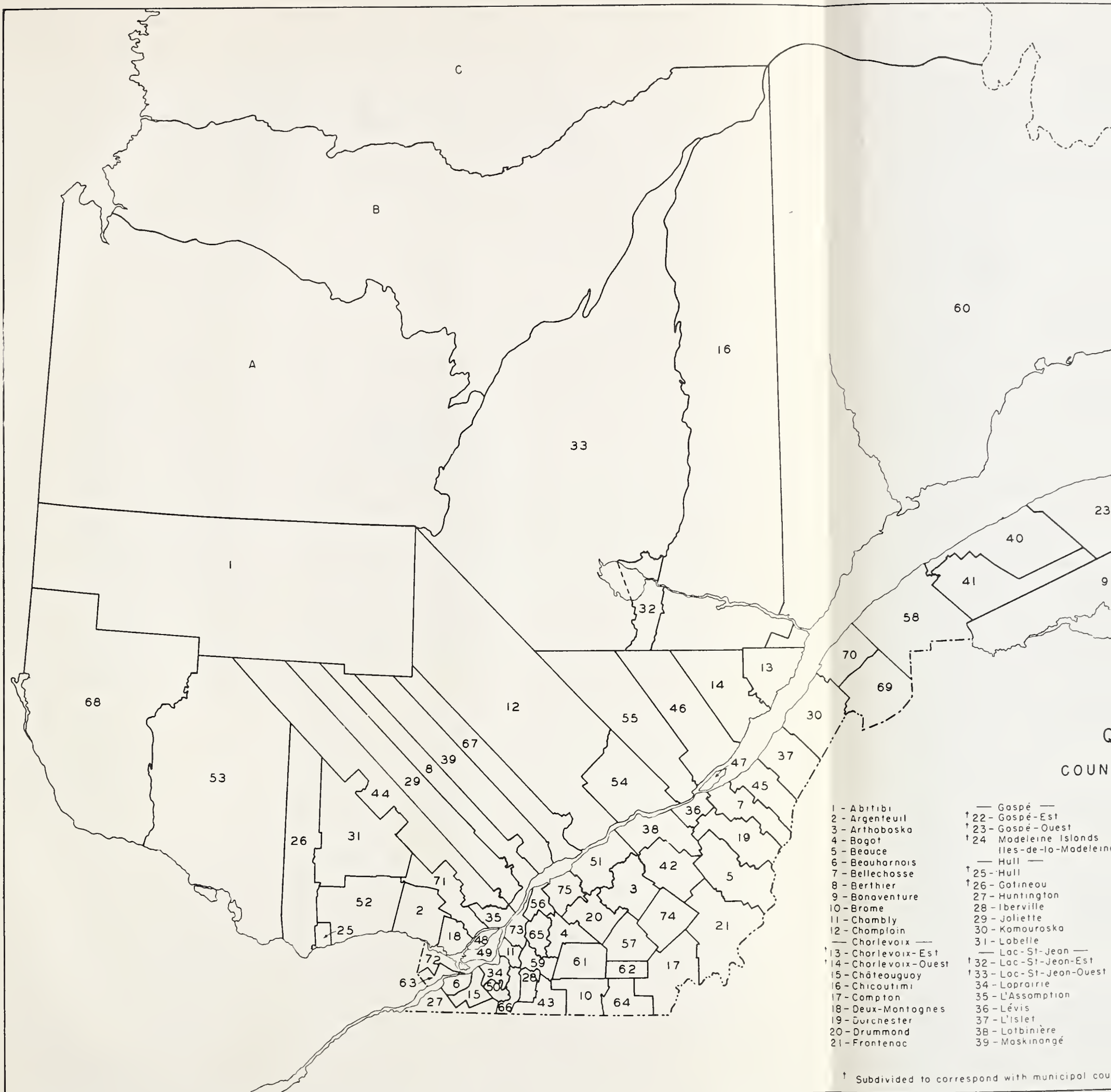
The socio-economic factors included all the possible factors one might think of besides the age-structure of the school-age population. There is certainly a pressing need for studying the individual influence of as many as possible of these socio-economic factors on school attendance. Further research is needed on the kind of influence exercised by the relative size of the employable and / or the total population. For example, does a smaller relative employable population adversely affect schooling by creating a difficult financial situation or by simply attracting young people to the field of work. It can be assumed that readily available occupational opportunities might create a bad psychological attitude toward schooling.

Because of the source of information used, it has been impossible to consider school attendance rates at different ages or at different levels. It seems that a similar study on the basis of school attendance at the high school and university levels would help very much in clarifying the present understanding of the factors affecting school attendance.

BIBLIOGRAPHY

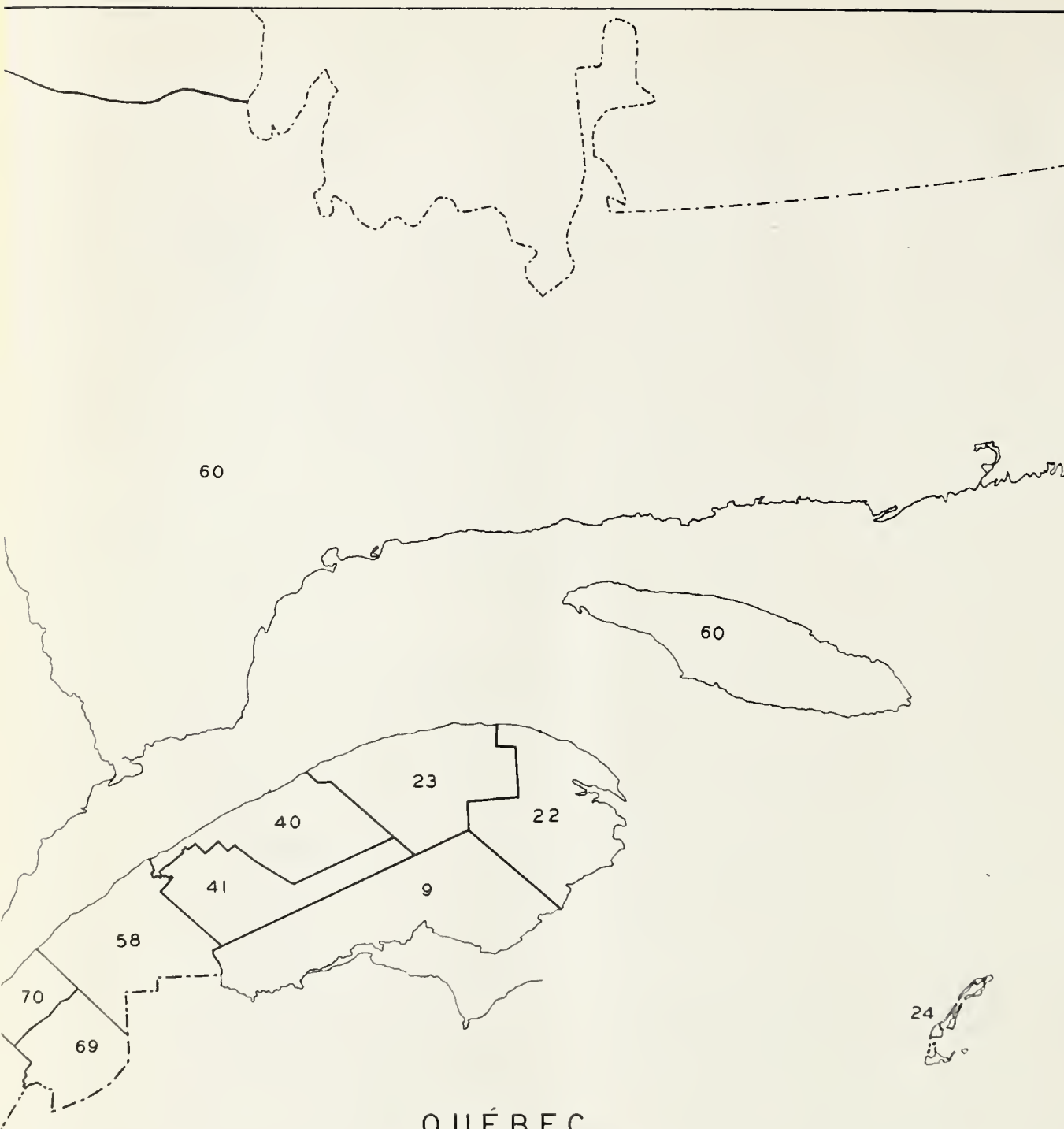
- Garett, Henry E. Statistics in Psychology and Education.
New York: Longmans, Green and Co., 1955, Fourth Edition.
- Landis, Paul H. Population Problems a Cultural Interpretation.
New York: American Book Company, 1954, Second Edition
prepared by Paul K. Hatt.
- Landry, Adolphe. Traité de Démographie. Paris: Payot, 1949.
- Lorimer, Frank. Dynamic Aspects of the Relation of Population
to Economic Development. In Demographic Analysis,
Selected Readings by Joseph J. Spengler and Otis Dudley
Duncan. Illinois: The Free Press, 1956.
- McNemar, Quinn. Psychological Statistics. New York: John
Wiley & Sons, Inc., 1955, Second Edition.

APPENDIX A



- | | |
|-------------------------|--------------------------|
| 1 - Abitibi | — Gaspé — |
| 2 - Argenteuil | † 22 - Gaspé-Est |
| 3 - Arthabaska | † 23 - Gaspé-Ouest |
| 4 - Bogen | † 24 - Madeleine Islands |
| 5 - Beauce | Iles-de-la-Madeleine |
| 6 - Beauharnois | — Hull — |
| 7 - Bellechasse | † 25 - Hull |
| 8 - Berthier | † 26 - Gatineau |
| 9 - Bonaventure | 27 - Huntingdon |
| 10 - Brome | 28 - Iberville |
| 11 - Chambly | 29 - Joliette |
| 12 - Champlain | 30 - Komouraska |
| — Charlevoix — | 31 - Labelle |
| † 13 - Charlevoix-Est | — Lac-St-Jean — |
| † 14 - Charlevoix-Ouest | † 32 - Lac-St-Jean-Est |
| 15 - Châteauguay | † 33 - Lac-St-Jean-Ouest |
| 16 - Chicoutimi | 34 - L'Assomption |
| 17 - Compton | 35 - Lévis |
| 18 - Deux-Montagnes | 36 - L'Islet |
| 19 - Drummond | 37 - Lotbinière |
| 20 - Frontenac | 38 - Maskinongé |
| | 39 - Maskinongé |

† Subdivided to correspond with municipal boundaries



QUÉBEC

COUNTIES — COMTÉS

1 - Abitibi
2 - Arthabaska
3 - Arthabaska
4 - Bagot
5 - Beauce
6 - Beauharnois
7 - Bellechasse
8 - Berthier
9 - Bonaventure
10 - Brome
11 - Chambly
12 - Champlain
13 - Charlevoix
14 - Charlevoix-Est
15 - Charlevoix-Ouest
16 - Châteauguay
17 - Chicoutimi
18 - Compton
19 - Deux-Montagnes
20 - Drummond
21 - Frontenac

— Gaspé —
† 22 - Gaspé-Est
† 23 - Gaspé-Ouest
† 24 - Madeleine Islands
Iles-de-la-Madeleine
— Hull —
† 25 - Hull
† 26 - Gatineau
27 - Huntington
28 - Iberville
29 - Joliette
30 - Kamouraska
31 - Labelle
— Lac-St-Jean —
† 32 - Lac-St-Jean-Est
† 33 - Lac-St-Jean-Ouest
34 - Laprairie
35 - L'Assomption
36 - Lévis
37 - L'Islet
38 - Lotbinière
39 - Maskinonge

— Matane —
† 40 - Matane
† 41 - Matapédia
42 - Mégantic
43 - Missisquoi
44 - Montcalm
45 - Montmagny
— Montmorency —
† 46 - Montmorency N° 1
† 47 - Montmorency N° 2 (Ile-d'Orléans)
48 - Jesus Island-Ile
49 - Montréal Island-Ile
50 - Napierville
51 - Nicolet
52 - Papineau
53 - Pontiac
54 - Portneuf
55 - Quebec
56 - Richelieu
57 - Richmond
58 - Rimouski
59 - Rouville

60 - Saguenay
61 - Shefford
62 - Sherbrooke
63 - Soulanges
64 - Stanstead
65 - Saint-Hyacinthe
66 - Saint-Jean
67 - Saint-Maurice
68 - Temiscouingue
— Temiscouata —
† 69 - Temiscouata
† 70 - Rivière-du-Loup
71 - Terrebonne
72 - Vaudreuil
73 - Vercheres
74 - Wolfe
75 - Yamaska

DISTRICTS - TERRITOIRES

A - Abitibi
B - Mistassini
C - Nouveau-Québec

† Subdivided to correspond with municipal counties † Subdivisé pour correspondre aux comtés municipaux

APPENDIX B

Since the basic data used in this research for 1901 cannot be found in the Federal Census Reports, the following Appendix has been prepared. The reader must be will awared that the data for 1901 are not by any means representative data for the whole fifty year period. In 1901 the differences between counties with regard to the age-structure of the school-age population or to the relative size of the employable and / or total population were much smaller than in 1931, 1941 or 1951.

TABLE I

THE COUNTIES' OBSERVED AND STANDARDIZED RATES FOR 1901,
 THE DIFFERENCES BETWEEN THESE RATES, AND THE
 DIFFERENCES BETWEEN THESE RATES
 AND THE PROVINCIAL STANDARD RATE
 (MALES AND FEMALES)

Counties	Rates			Differences		
	Standard (A)	Observed (B)	Standardized (C)	C-A	B-C	B-A
1	47.80	36.80	51.30	3.50	-14.50	-11.00
2		37.80	50.50	2.70	-12.70	-10.00
3		42.80	51.10	3.30	- 8.30	- 5.00
4		40.30	51.53	3.73	-11.23	- 7.50
5		37.90	50.70	2.90	-12.80	- 9.90
6		39.70	48.70	0.90	- 9.00	- 8.10
7		40.80	52.32	4.52	-11.52	- 7.00
8		43.00	50.49	2.69	- 7.49	- 4.80
9		35.40	49.64	1.84	-14.24	-12.40
10		42.30	49.32	1.52	- 7.02	- 5.50
11		44.60	50.71	2.91	- 6.11	- 3.20
12		40.30	50.35	2.55	-10.05	- 7.50
13-14		38.90	51.79	3.99	-12.89	- 8.90
15		38.60	50.40	2.60	-11.80	- 9.20
16		30.90	49.83	2.03	-18.93	-16.90
17		43.10	49.72	1.92	- 6.62	- 4.70
18		48.60	50.90	3.06	- 2.26	0.80
19		34.30	50.80	3.00	-16.50	-13.50
20		42.80	51.09	3.29	- 8.29	- 5.00
21		39.90	50.32	2.52	-10.42	- 7.90
22-23-24		35.80	49.72	1.92	-13.92	-12.00
25-26		31.10	50.36	2.56	-19.26	-16.70
27		39.30	48.87	1.07	- 9.57	- 8.50
28		47.00	50.38	2.58	- 3.38	- 0.80
29		44.10	50.78	2.98	- 6.68	- 3.70
30		43.20	51.81	4.01	- 8.61	- 4.60
31		32.60	50.23	2.43	-17.63	-15.20
32-33		30.90	49.82	2.02	-18.92	-16.90
34		44.00	50.38	2.58	- 6.38	- 3.80
35		44.60	50.38	2.58	- 5.78	- 3.20
36		41.80	49.80	2.00	- 8.00	- 6.00
37		40.80	50.10	2.30	- 9.30	- 7.00

TABLE I (continued)

Counties	Rates			Differences		
	Standard (A)	Observed (B)	Standardized (C)	C-A	B-C	B-A
38	47.80	42.80	50.19	2.39	- 7.39	- 5.00
39		39.20	50.54	2.74	-11.34	8.60
40-41		36.80	51.24	3.44	-14.44	-11.00
42		35.80	49.34	1.54	-13.54	-12.00
43		43.60	49.98	2.18	- 6.38	- 4.20
44		40.00	50.53	2.73	-10.53	- 7.80
45		33.50	50.48	2.68	-16.98	-14.30
46-47		38.60	50.96	3.16	-12.36	- 9.20
48-49		38.50	45.62	-2.18	- 7.12	- 9.30
50		45.20	50.34	2.54	- 5.14	- 2.60
51		44.20	51.16	3.36	- 6.96	- 3.60
52		32.50	50.24	2.44	-17.74	-15.30
53		28.40	48.98	1.18	-20.58	-19.40
54		37.10	49.77	1.97	-12.67	-10.70
55		38.90	46.32	-1.48	- 7.42	- 8.90
56		47.70	51.61	3.81	- 3.91	- 0.10
57		37.80	50.61	2.81	-12.81	-10.00
58		36.80	51.24	3.44	-14.44	-11.00
59		44.60	50.80	3.00	- 6.20	- 3.20
60		30.90	49.83	2.03	-18.93	-16.90
61		39.10	53.75	5.95	-14.65	- 8.70
62		41.40	47.40	-0.40	- 6.00	- 6.40
63		41.50	51.39	3.59	- 9.89	- 6.30
64		41.00	48.96	1.16	- 7.96	- 6.80
65		45.80	49.30	1.54	- 3.54	- 2.00
66		46.70	50.36	2.56	- 3.66	- 1.10
67		40.70	48.70	0.90	- 8.00	- 7.10
68		28.40	48.96	1.16	-20.56	-19.40
69-70		36.70	50.36	2.56	-13.66	-11.10
71		37.20	50.76	2.96	-13.56	-10.60
72		41.20	51.03	3.23	- 9.83	- 6.60
73		44.60	50.72	2.92	- 6.12	- 3.20
74		37.80	50.62	2.82	-12.82	-10.00
75		46.00	51.54	3.74	- 5.54	- 1.80

TABLE II

THE RELATIVE SIZE OF THE EMPLOYABLE POPULATION AND OF THE
TOTAL POPULATION FOR THE CENSUS COUNTIES IN 1901

Counties	The relative size of	
	employable population ^a	total population ^b
1	49.44	22.08
2	51.78	23.00
3	54.30	22.75
4	52.59	22.39
5	58.73	23.53
6	50.58	22.75
7	57.08	23.20
8	52.99	22.63
9	52.92	23.03
10	41.04	20.11
11	49.47	21.95
12	52.56	22.71
13-14	60.19	24.18
15	47.45	21.77
16	57.55	23.50
17	46.65	21.27
18	50.73	22.47
19	55.17	22.79
20	54.29	22.75
21	53.42	22.61
22-23-24	55.16	23.27
25-26	52.78	23.17
27	43.54	20.65
28	48.59	21.74
29	54.14	22.80
30	55.26	22.61
31	55.17	23.53
32-33	57.54	23.50
34	50.40	22.05
35	49.62	21.85
36	47.32	21.60
37	54.33	22.79
38	51.03	22.05
39	51.43	22.20
40-41	62.90	24.59
42	50.93	22.10

TABLE II (continued)

Counties	The relative size of	
	employable population ^a	total population ^b
43	42.11	20.25
44	51.82	22.28
45	48.40	21.42
46-47	51.66	22.41
48-49	34.72	18.74
50	51.10	22.10
51	52.88	22.77
52	54.97	23.50
53	50.20	22.54
54	50.02	21.98
55	37.79	19.36
56	54.01	23.05
57	50.93	22.19
58	62.91	24.59
59	46.89	21.02
60	57.55	23.50
61	52.46	23.44
62	42.85	21.00
63	52.67	22.51
64	41.92	20.48
65	44.09	20.90
66	47.90	21.59
67	48.27	22.05
68	50.18	22.57
69-70	58.34	23.64
71	52.91	22.74
72	53.40	22.90
73	49.47	21.96
74	50.93	22.19
75	55.91	23.31

^aThe relative size of the employable population is the ratio of the expected school population to the employable population multiplied by 100.

^bThe relative size of the total population is the ratio of the expected school population to the total population multiplied by 100.

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